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JP1 Version 12

JP1/Performance Management - Remote Monitor for Oracle Description, User's Guide and Reference

3021-3-D81-10(E)

Notices

■ Relevant program products

For details about the applicable OS versions, and the service packs and patches required for JP1/Performance Management - Remote Monitor for Oracle, see the *Release Notes*.

JP1/Performance Management - Manager (For Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, Windows Server 2019):

P-2A2C-AACL JP1/Performance Management - Manager version 12-10

The above product includes the following:

P-CC2A2C-5ACL JP1/Performance Management - Manager version 12-00

P-CC2A2C-5RCL JP1/Performance Management - Web Console version 12-10

JP1/Performance Management - Manager (For CentOS 6 (x64), CentOS 7, Linux 6 (x64), Linux 7, Oracle Linux 6 (x64), Oracle Linux 7, SUSE Linux 12, SUSE Linux 15):

P-812C-AACL JP1/Performance Management - Manager version 12-10

The above product includes the following:

P-CC812C-5ACL JP1/Performance Management - Manager version 12-00

P-CC812C-5RCL JP1/Performance Management - Web Console version 12-10

JP1/Performance Management - Remote Monitor for Oracle (For Windows Server 2012, Windows Server 2012 R2, Windows Server 2016, Windows Server 2019):

P-2A2C-GDCL JP1/Performance Management - Remote Monitor for Oracle version 12-10

The above product includes the following:

P-CC2A2C-AJCL JP1/Performance Management - Base version 12-00

P-CC2A2C-5DCL JP1/Performance Management - Remote Monitor for Oracle version 12-10

JP1/Performance Management - Remote Monitor for Oracle (For Linux 6 (x64), Linux 7, Oracle Linux 6 (x64), Oracle Linux 7):

P-812C-GDCL JP1/Performance Management - Remote Monitor for Oracle version 12-10

The above product includes the following:

P-CC812C-AJCL JP1/Performance Management - Base version 12-00

P-CC812C-5DCL JP1/Performance Management - Remote Monitor for Oracle version 12-10

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■ Microsoft product name abbreviations

This manual uses the following abbreviations for Microsoft product names.

Abbreviation		Full name or meaning
Internet Explorer		Microsoft(R) Internet Explorer(R)
		Windows(R) Internet Explorer(R)
WSFC		Microsoft(R) Windows Server(R) Failover Cluster
Windows Server 2012	Windows Server 2012	Microsoft(R) Windows Server(R) 2012 Datacenter
		Microsoft(R) Windows Server(R) 2012 Standard
	Windows Server 2012 R2	Microsoft(R) Windows Server(R) 2012 R2 Datacenter
		Microsoft(R) Windows Server(R) 2012 R2 Standard

Abbreviation	Full name or meaning
Windows Server 2016	Microsoft(R) Windows Server(R) 2016 Datacenter
	Microsoft(R) Windows Server(R) 2016 Standard
Windows Server 2019	Microsoft(R) Windows Server(R) 2019 Datacenter
	Microsoft(R) Windows Server(R) 2019 Standard

Windows is sometimes used generically, referring to Windows Server 2012, Windows Server 2016 and Windows Server 2019.

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Jan. 2020: 3021-3-D81-10(E)

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Summary of amendments

The following table lists changes in this manual (3021-3-D81-10(E)) and product changes related to this manual.

Changes	Location
Changes were made to the procedure for registering PFM - RM for Oracle.	*2.1.4(1)*, *2.2.4(2)*, *3.3.4(1)*, *3.4.4(1)*
The version of the data model has been changed from 7.0 to 8.0, and the version of the alarm table has been changed from 12.00 to 12.10.	*Chapter 4*, *Appendix J*
The following report was added to monitor the fast recovery area: • Fast Recovery Area Status	*Chapter 4*
A field for monitoring free space available for the disk group was added to the following record: • ASM Disk Group Interval (PI_PIDG)	*Chapter 5*
A field for monitoring the fast recovery area was added to the following record: • Collection Instance 2 (PD_PCI)	*Chapter 5*

In addition to the above changes, minor editorial corrections were made.

Preface

This manual describes the functionality and records of JP1/Performance Management - Remote Monitor for Oracle.

■ Intended readers

This manual describes JP1/Performance Management. The manual is intended for the following readers:

- Users who wish to design or construct an operation monitoring system.
- Users who wish to define conditions for collecting performance data.
- Users who wish to define reports and alarms.
- Users who wish to use collected performance data to monitor a system.
- Users who wish to consider or take actions for a system based on monitoring results.

Readers are assumed to be familiar with Oracle and the operation of the system being monitored, and to have a knowledge of the OS.

For details about how to design and run systems that use JP1/Performance Management, also see the following manuals:

- *JP1/Performance Management Planning and Configuration Guide*
- *JP1/Performance Management User's Guide*
- *JP1/Performance Management Reference*

■ Organization of this manual

This manual consists of the following parts, and is a common reference for the following supported OSs: Windows and Linux. Any platform-dependent differences are noted separately in the manual.

Part *1. Overview*

This part provides an overview of JP1/Performance Management - Remote Monitor for Oracle.

Part *2. Configuration and Operations*

Part 2 describes how to install and set up JP1/Performance Management - Remote Monitor for Oracle, and how to run the program in a cluster system.

Part *3. Reference*

This part describes the monitoring template, records, and messages of JP1/Performance Management - Remote Monitor for Oracle.

Part *4. Troubleshooting*

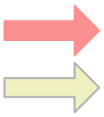
This part describes the actions to be taken for errors that might occur during operation of JP1/Performance Management - Remote Monitor for Oracle.

■ Conventions: Diagrams

This manual uses the following conventions in diagrams:

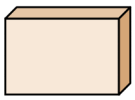
● Computer

● Data flow



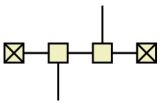
● Processing flow

● Program



● File

● Network



● Server

● Failure

● I/O operation

■ Conventions: Fonts and symbols

Font and symbol conventions are classified as:

- General font conventions
- Conventions in syntax explanations

These conventions are described below.

General font conventions

The following table lists the general font conventions:

Font	Convention
Bold	Bold type indicates text on a window, other than the window title. Such text includes menus, menu options, buttons, radio box options, or explanatory labels. For example, bold is used in sentences such as the following: • From the **File** menu, choose **Open**. • Click the **Cancel** button. • In the **Enter name** entry box, type your name.
Italics	Italics are used to indicate a placeholder for some actual text provided by the user or system. Italics are also used for emphasis. For example: • Write the command as follows: `copy` *source-file target-file* • Do *not* delete the configuration file.
`Code font`	A code font indicates text that the user enters without change, or text (such as messages) output by the system. For example: • At the prompt, enter `dir`. • Use the `send` command to send mail. • The following message is displayed: `The password is incorrect.`

Examples of coding and messages appear as follows (although there may be some exceptions, such as when coding is included in a diagram):

```
MakeDatabase
...
StoreDatabase temp DB32
```

In examples of coding, an ellipsis (...) indicates that one or more lines of coding are not shown for purposes of brevity.

Conventions in syntax explanations

Syntax definitions appear as follows:

Store**D**atabase [A|B] {C|D|E} (*database-name* ...)

The following table lists the conventions used in syntax explanations.

Example font or symbol	Convention
StoreDatabase	The user should enter code-font characters exactly as shown.
database-name	In actual commands the user must replace the italics by suitable characters.
SD	Bold code-font characters indicate an abbreviation for a command.
A	The underlined characters are the system default when you omit all the items enclosed in brackets. Example: [A|B] indicates that the system uses A if you do not specify either A or B.
|	Only one of the options separated by a vertical bar can be used at one time. Example: A|B|C indicates A, or B, or C.
{ }	One of the items enclosed in braces and separated by a vertical bar must be specified. Example: {C|D|E} indicates that one of the items from C, or D, or E must be specified.
[ ]	The item or items enclosed in brackets are optional. Example: [A] indicates the specification of A or nothing. [B|C] indicates the specification of B or C, or nothing.
...	The item or items preceding the ellipsis (...) can be repeated. To specify multiple items, use a one-byte space to delimit them. Example: A B ... indicates that B can be specified as many times as necessary after A.
( )	The items enclosed by the parentheses are in the range to which | or ... are applied.

■ Conventions: Mathematical expressions

The following table lists conventions used in mathematical expressions:

Symbol	Description
×	Multiplication sign

Symbol	Description
/	Division

■ Conventions: Version numbers

The version numbers of Hitachi program products are usually written as two sets of two digits each, separated by a hyphen. For example:

- Version 1.00 (or 1.0) is written as 01-00.
- Version 2.05 is written as 02-05.
- Version 2.50 (or 2.5) is written as 02-50.
- Version 12.25 is written as 12-25.

The version number might be shown on the spine of a manual as *Ver. 2.00,* but the same version number would be written in the program as *02-00*.

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1 Overview of PFM - RM for Oracle

This chapter provides an overview of PFM - RM for Oracle.

1.1 Features of PFM - RM for Oracle

PFM - RM for Oracle has the following features:

- Ability to monitor the target hosts agentlessly.
  One PFM - RM for Oracle remotely monitors Oracle performances on the multiple target hosts.
- Ability to analyze the operating status of Oracle
  PFM - RM for Oracle provides the information needed for easy analysis of the operating status of Oracle. It does so by collecting and summarizing performance data (such as session statistics) obtained from the Oracle instance being monitored, and then graphically displaying any trends or changes.
- Ability to detect Oracle problems and quickly provide the information needed to identify the cause of a problem
  In the event of a problem, such as a malfunction in a session on the Oracle system being monitored, PFM - RM for Oracle alerts the user to the problem at an early stage by using email or other means to notify the user. PFM - RM for Oracle also provides a graphical display of the information needed to identify the cause of a problem.

To use PFM - RM for Oracle, you must also install the programs PFM - Manager, and PFM - Web Console.

The following subsections summarize the functions of PFM - RM for Oracle.

1.1.1 Monitor the multiple target hosts agentlessly

PFM - RM for Oracle remotely monitors the Oracle performance.

This *remote monitoring* means the function for the other hosts than the Oracle hosts to monitor the Oracle operating status even though you do not install any agent programs on the monitoring target Oracle hosts.

Since the installation of PFM - RM for Oracle on the monitored host is not required, you can monitor the performance data without changing the system configuration of the target server (or host). One PFM - RM for Oracle can monitor the performance data of the multiple Oracle hosts.

Note that in Performance Management the target host of PFM - RM for Oracle is called *monitored host*.

For details about the supported Oracle programs, see *2.1.1(4)(a) Monitoring target programs* and *2.2.1(4)(a) Monitoring target programs*.

1.1.2 Collecting Oracle performance data

PFM - RM for Oracle enables you to collect performance data, such as statistical information on the current Oracle session on the host being monitored.

Note:

In a Linux environment, PFM - RM for Oracle supports UTF-8 (for Japanese Linux and Chinese Linux) and GB18030 (for Chinese Linux). In a Windows environment, PFM - RM for Oracle supports SJIS (for Japanese Windows) and GB18030 (for Simplified-Chinese Windows). In other environment, PFM - RM for Oracle supports within the scope of 7-bit ASCII characters.

With PFM - RM for Oracle, you can use the collected performance data as follows:

- To graphically display the operating status of Oracle

By using PFM - Web Console, you can process and display performance data in a graphical format called a *report*. A report facilitates the analysis of the Oracle operating status.

There are two types of reports:

- *Real-time reports*

  A real-time report indicates the current status of an Oracle system being monitored. It is used primarily to check the current status of the system and to detect problems in the system. To display real-time reports, PFM - RM for Oracle uses current performance data that has just been collected.

- *Historical reports*

  A historical report indicates the status of an Oracle system being monitored from a selected point of time in the past to the present. It is used primarily to analyze trends in the system. To display a historical report, the system uses performance data that has been stored in a database for PFM - RM for Oracle.

- As criteria for determining whether a problem has occurred

  You can set PFM - RM for Oracle to take some action (such as notifying the user) if collected performance data indicates an abnormal condition.

1.1.3 Collecting performance data based on its characteristics

PFM - RM for Oracle collects performance data in *records*. Each record consists of smaller units called *fields*. Collectively, the records and fields are referred to as the *data model*.

Records are classified into two types according to their characteristics. These record types are predefined in PFM - RM for Oracle. The user simply uses PFM - Web Console to specify the performance data records to be collected.

PFM - RM for Oracle supports the following two record types:

- Product Interval record type (referred to hereafter as the *PI record type*)

  For records of the PI record type, the system collects performance data for a specified interval, such as the number of processes executed in one minute. You can use these records to analyze the changes or trends in the system status over time.

- Product Detail record type (referred to hereafter as the *PD record type*)

  For records of the PD record type, the system collects performance data that indicates the system status at a specific point in time, such as detailed information about the currently active processes. You can use these records to obtain the system status at a particular time.

For more information about record types, see *5. Records*.

1.1.4 Saving performance data

Because collected performance data is stored in a special database, you can save performance data up to the current date, and use it to analyze trends (from a selected point in the past to the current date) in the Oracle operating states. This special database is called the *Store database* of PFM - RM for Oracle. Trends are analyzed using historical reports.

Use PFM - Web Console to select the performance data records to be stored in the Store database. For details about how to select records with PFM - Web Console, see the chapter on the management of operation monitoring data in the *JP1/Performance Management User's Guide*.

1.1.5 Notifying users of problems in Oracle operation

In addition to using performance data collected by PFM - RM for Oracle to display Oracle Database performance as reports, you can also use it to warn the user of a problem or error occurring during Oracle Database operation.

Suppose that you wish to notify the user by email whenever the percentage of table scans exceeds 10%. You can do this by setting *percentage of table scans that do not use an index exceeds 10%* as the abnormal condition threshold, and setting the system to send an email to the user when this threshold is reached. What the system does when the threshold is reached is called an *action*. The following types of actions are available:

- Sending an email
- Executing a command
- Issuing an SNMP trap
- Issuing a JP1 event

The definition of a threshold or action is called an *alarm*. A table of defined alarms is called an *alarm table*. Once an alarm table is defined, it is associated with PFM - RM for Oracle. Associating an alarm table with PFM - RM for Oracle is called *binding*. Once an alarm table has been bound to PFM - RM for Oracle, whenever the performance data collected by PFM - RM for Oracle reaches the threshold defined as an alarm, the event is reported to the user.

By defining alarms and actions, you can detect Oracle problems at an early stage and take appropriate action.

For details about how to set alarms and actions, see the chapter on alarm-based operation monitoring in the *JP1/Performance Management User's Guide*.

1.1.6 Easy definition of alarms and reports

PFM - RM for Oracle provides a *monitoring template* that contains predefined information necessary for standard reports and alarms. The monitoring template facilitates setup for monitoring the Oracle operating status, because it does not require you to make any complicated definitions. You can also customize the monitoring template as needed for your environment. For details about how to use the monitoring template, see the chapter on creating reports for operation analysis or the chapter on alarm-based operation monitoring in the *JP1/Performance Management User's Guide*. For details about the monitoring template, see *4. Monitoring template*.

1.1.7 Operation with a cluster system

By using a cluster configuration, you can create a highly reliable system that continues to operate even in the event of a system failure. As a result, the programs in Performance Management can continue operation and monitoring 24 hours a day.

There are two methods to operate PFM - RM for Oracle in an HA cluster system:

- Operate PFM - RM for Oracle when Oracle Database operates in an HA cluster system.
- Operate PFM - RM for Oracle in an HA cluster system.

The following figure shows an example of operation when a problem occurs on the monitored host in a cluster system.

Figure 1–1: Example of PFM - RM for Oracle monitoring Oracle in an HA cluster system

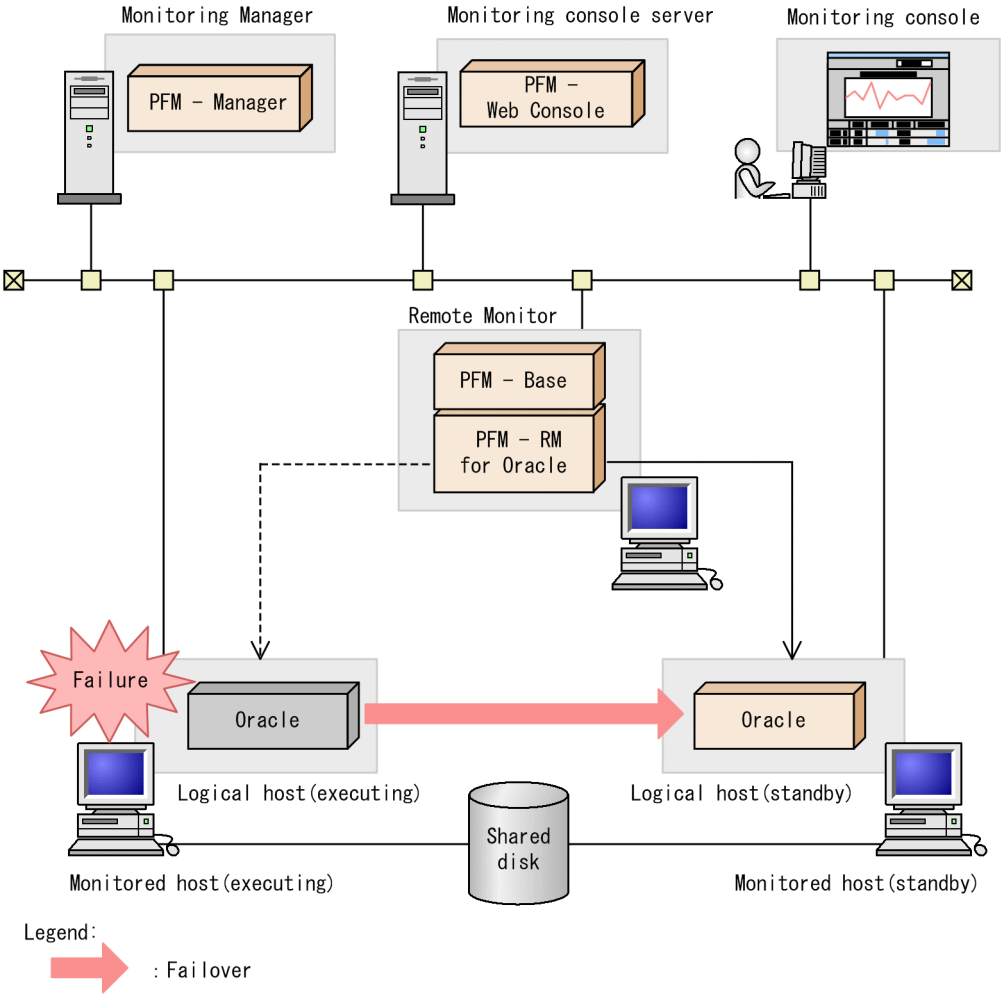
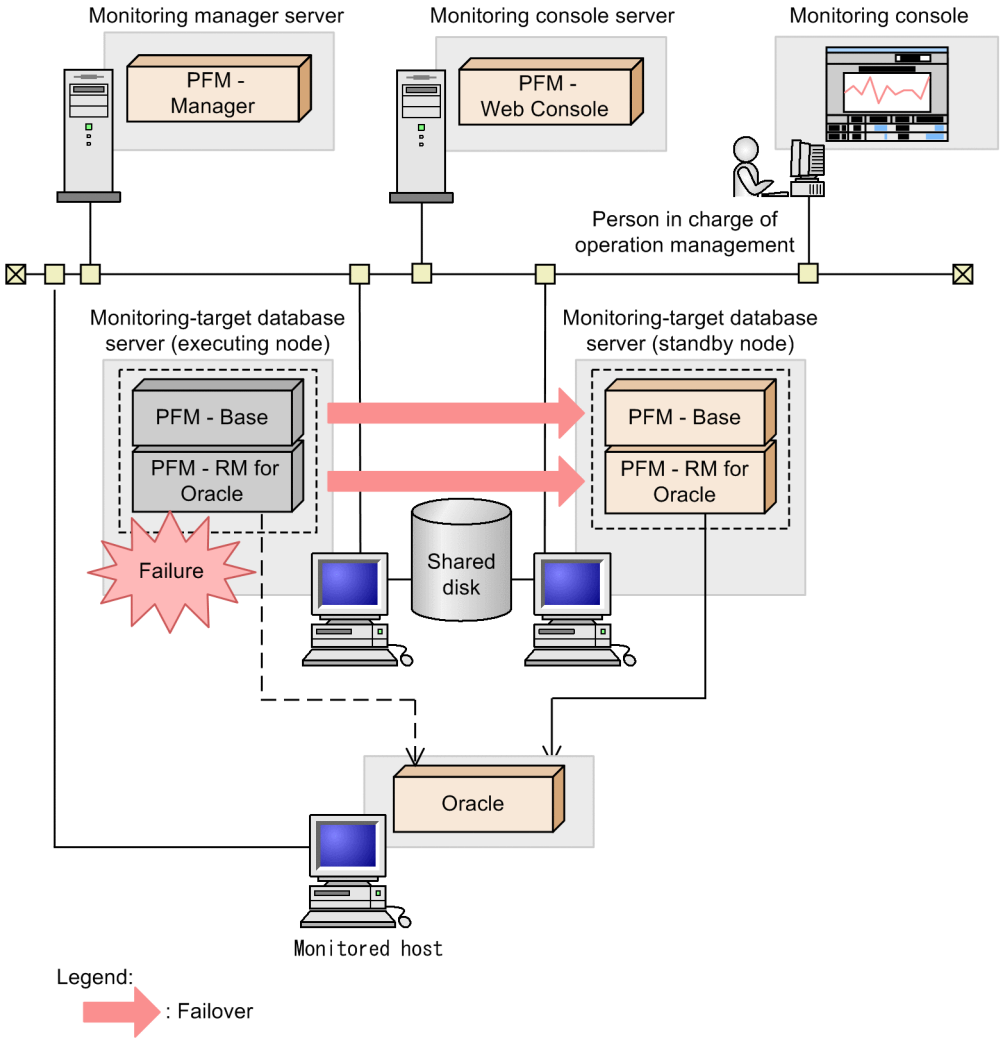


Figure 1–2: Example of an PFM - RM for Oracle configuration in an HA cluster system



For more details about running the programs in Performance Management on a cluster system, see *3. Operating PFM - RM for Oracle in a Cluster System*.

1.1.8 Operation with a multitenant container database (CDB) configuration

If the monitoring-target program is Oracle Database 12c Release 2 or later, PFM - RM for Oracle can operate with a multitenant container database (referred to hereafter as the *CDB*) configuration, in addition to a traditional non-multitenant container database (referred to hereafter as the *non-CDB*) configuration.

In a CDB configuration environment, instances of PFM - RM for Oracle are created for each pluggable database (referred to hereafter as the *PDB*) and monitored. PFM - RM for Oracle can also monitor the root container (`CDB$ROOT`). Monitoring application containers (an application root and application PDBs) is not supported.

In a CDB configuration, the records that are supported on monitoring PDBs and the root container are different from the supported records in a non-CDB configuration. Also, some of the records or fields collect the following performance data:

- Information for the PDBs to be monitored and the range of the root container to be monitored

- Common information for database instances

For details, see *5. List of records for PFM - RM for Oracle* or the descriptions of each record field.

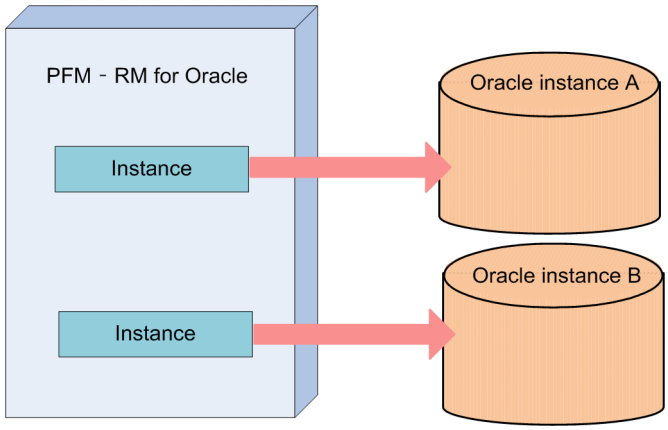
(1) Operating a CDB configuration in single-instance

The following show operations used when monitoring with a non-CDB configuration and with a CDB configuration.

(a) When monitoring a non-multitenant container database (non-CDB)

Instance of PFM - RM for Oracle for each Oracle instance are created and monitored.

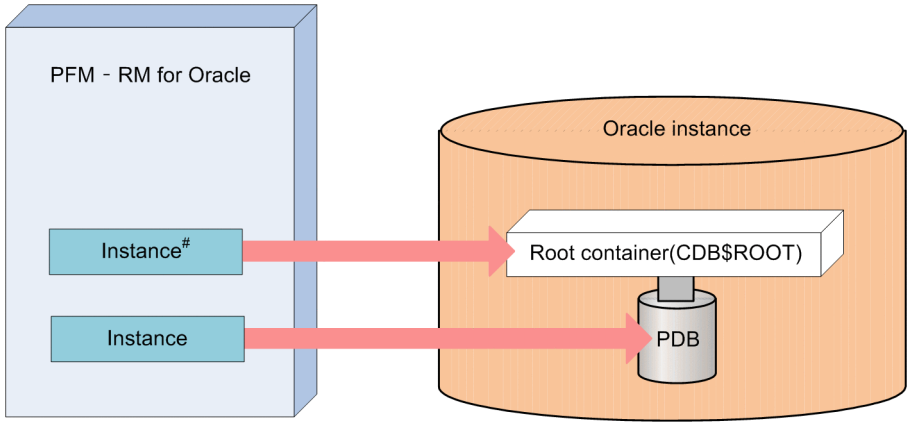
Figure 1–3: Monitoring with a non-CDB configuration



(b) When monitoring the root container (CDB$ROOT) or PDBs

Instance of PFM - RM for Oracle are created, and a PDB and the root container are monitored.

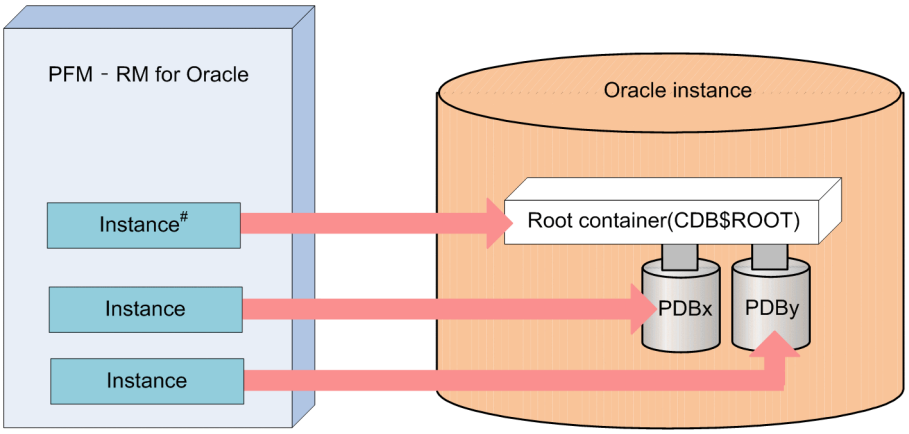
Figure 1–4: Monitoring with a CDB configuration (with a single PDB)



Monitoring the root container (CDB$ROOT) is optional.
Monitor it as needed. For example, you might need to monitor tablespaces of the root container.

Instance of PFM - RM for Oracle are created, and PDBs and the root container are monitored.

Figure 1–5: Monitoring with a CDB configuration (with multiple PDBs)



Monitoring the root container (CDB$ROOT) is optional.
Monitor it as needed. For example, you might need to monitor tablespaces of the root container.

(2) Operating a CDB configuration in an Oracle RAC

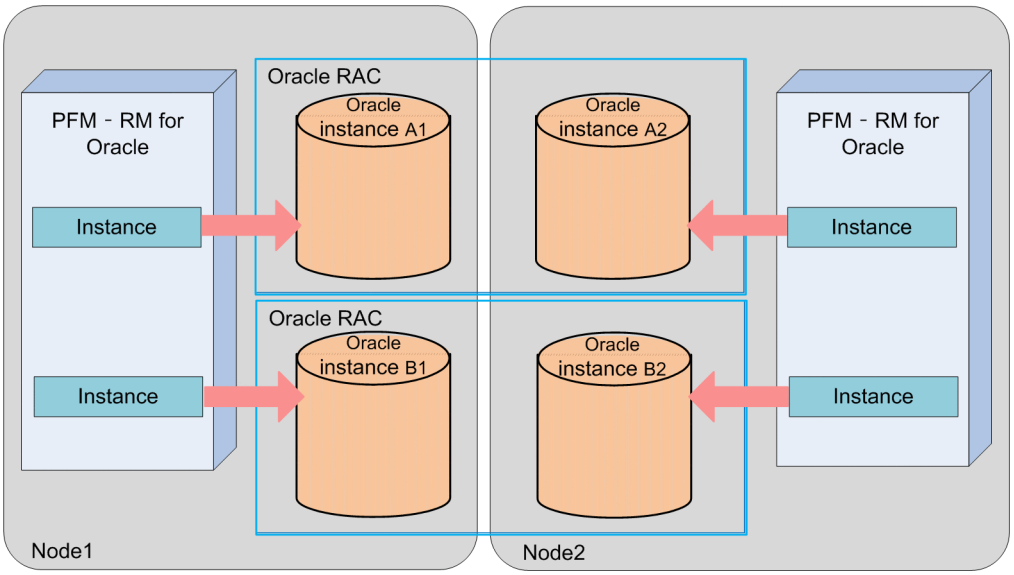
When operating in an Oracle RAC configuration, it appears that one Oracle instance is running from the application, but each node is running an Oracle instance under the node's own instance name. For example, a tablespace is shared by each node, but I/O information is unique to each node. Therefore, when operating a CDB configuration in Oracle RAC, create instances of PFM - RM for Oracle and monitor it so that it monitors the PDB and the root container (CDB $ROOT) on each node.

The following shows the configurations of PFM - RM for Oracle and the Oracle database when operating a non-CDB configuration and when operating a CDB configuration in Oracle RAC.

(a) When monitoring a non-multitenant container database (non-CDB)

Instance of PFM - RM for Oracle for each Oracle instance of each node are created and monitored.

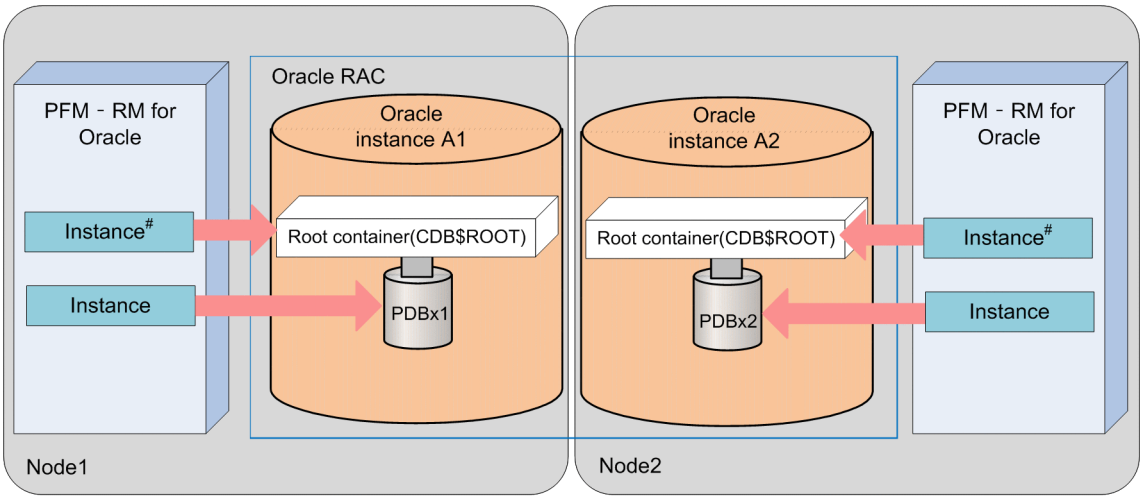
Figure 1–6: Operating a non-CDB configuration in an Oracle RAC



(b) When monitoring the root container (CDB$ROOT) or PDBs

Instance of PFM - RM for Oracle are created, and the PDB and the root container of each node are monitored.

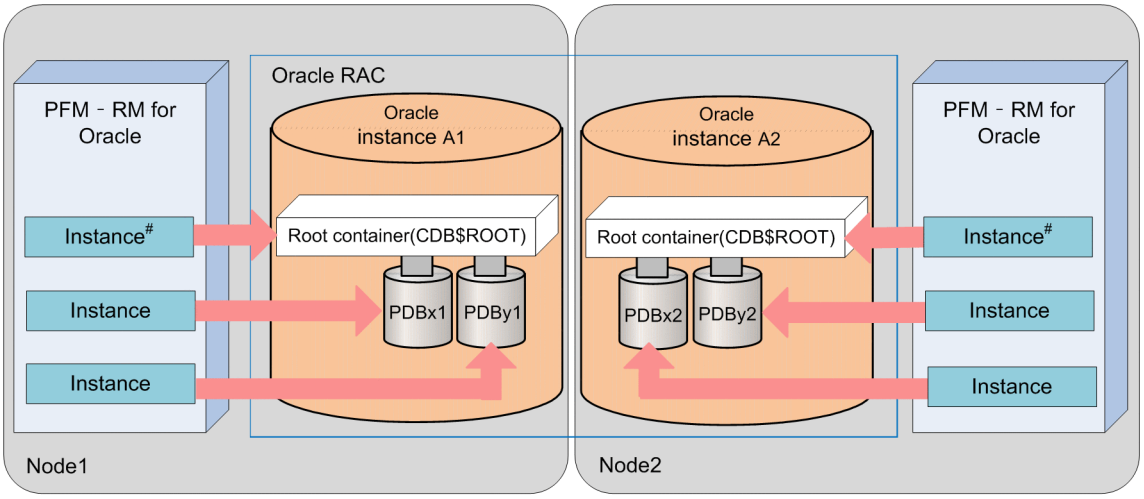
Figure 1–7: Operating a CDB configuration (singletenant) in an Oracle RAC



Monitoring the root container (CDB$ROOT) is optional.
Monitor it as needed. For example, you might need to monitor tablespaces of the root container.

Instance of PFM - RM for Oracle are created, and the PDB and the root container of each node are monitored.

Figure 1–8: Operating a CDB configuration (multitenant) in an Oracle RAC



Monitoring the root container (CDB$ROOT) is optional.
Monitor it as needed. For example, you might need to monitor tablespaces of the root container.

(3) Note

When monitoring multiple PDBs or root containers (CDB$ROOT) in a CDB configuration (multi-tenant), create an instance of PFM - RM for Oracle that monitors each container. The number of instances that can be created depends on the system configuration, resource status, number of records to be monitored, and collection interval. Please verify the situation thoroughly before operating.

1.2 Overview of collection and management of performance data

The procedures for collecting and managing performance data depend on the record type used to store the performance data. The records for PFM - RM for Oracle are classified into the following two types:

- PI record type
- PD record type

For details about how to collect and manage performance data, see the following sections:

- Performance data collection procedure

  For details about the performance data collection procedure, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.

  For details about the values of the collected performance data, see *5. Records*.
- Performance data management procedure

  For details about the performance data management procedure, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.

When you want to select performance data from the records collected and managed by PFM - RM, you use PFM - Web Console. For details about how to select performance data, see the chapter on the management of operation monitoring data in the *JP1/Performance Management User's Guide*.

1.3 Example of performance monitoring using PFM - RM for Oracle

Performance monitoring is critical for the setup and management of Oracle server environments. The following explains the purpose of performance monitoring using PFM - RM for Oracle, and provides an example of performance monitoring.

1.3.1 Purpose of performance monitoring

Performance monitoring using PFM - RM for Oracle can be used to perform the following:

- Analysis of performance data to discover causes of bottlenecks
- Monitoring to check whether the Oracle server is running properly

During Oracle server operation, specific causes can negatively impact overall Oracle server performance. These causes can include the following:

- Insufficient buffer cache
- Insufficient shared pools
- Insufficient memory for sort operations
- Increase in the "Search All" ratio
- Insufficient segment free lists
- Insufficient disk capacity
- Occurrence of wait events concerning REDO log file

It is very important to make sure that the Oracle server is running properly. In addition to performance standpoints, monitoring such as the following can be used to check whether an Oracle server is running properly.

- Oracle instance operation monitoring

Performance monitoring using PFM - RM for Oracle can be performed to achieve stable operation for Oracle servers.

Note that the performance monitoring method thresholds are for reference only. The actual thresholds need to be determined through baseline measurement.

The actual items set need to be determined based on the type of operation for the Oracle server.

1.3.2 Determining a baseline

Determining a baseline involves using the results of performance measurement to calculate the line at which no system operation problems are anticipated.

Performance Management products treat baseline values as *thresholds* for system operation monitoring. As such, determining a baseline is important for deciding on a threshold and performing performance monitoring.

Hitachi recommends that you perform the following when you determine a baseline:

- Measuring statuses during peak times, such as by performing testing under heavy operation environment load

- Re-measure baselines when system resources or operation environments are changed, as these can differ significantly by system configuration

1.3.3 Search processing performance

To maintain and improve Oracle Database search processing performance, set the maximum number of tuning items, and monitor Oracle to check whether they remain in the permitted ranges.

The following Oracle items may be monitored to maintain or improve search processing performance:

- Buffer cache usage
- Database data and rollback block contention
- Dictionary caching
- Sorts performed on disk as a ratio of all sorts, for memory and disk I/O usage
- "Search All" ratio
- Library caching

(1) Records and fields related to search processing performance

The following table describes the records and fields related to search processing performance.

Table 1–1: Records and fields related to search processing performance

Record used	Field used	Value measured (example)
PI	Cache Hit %	Buffer cache usage
	Buffer Busy Wait %	Buffer busy wait ratio
	Dict Cache Get Miss %	Ratio of data requests due to cache misses
	Sort Overflow %	Ratio of sorts using temporary segments
	Non-Index Lookups %	Ratio of full-table scans for which caching is not performed
	Lib Cache Miss %	Library cache miss rate This field means the ratio of times the allocated objects in library cache are reloaded. As the value of this field increases, the amount of resources in use also increases.

(2) Monitoring methods

Monitoring buffer cache usage

Buffer cache usage can be monitored by using the *Buffer Cache Usage alarm* provided by the monitoring template.

Monitoring database data and rollback block contention

Database data and rollback block contention can be monitored by using the *Buffer Cache Waits alarm* provided by the monitoring template. Monitoring database data and rollback block contention alongside *Buffer Cache Usage alarm* can be very useful.

When Buffer Cache Usage is at or below its threshold, and Buffer Cache Waits is at or above its threshold, this is often because the buffer cache is insufficient. When the buffer cache is insufficient, disk I/O is performed, which may degrade performance. This problem can be handled by increasing the size of DB_CACHE_SIZE.

Monitoring dictionary caching

Dictionary caching can be monitoring by using the *Dict. Cache Usage alarm* provided by the monitoring template.

Monitoring library caching

Library caching can be monitored by using the *Library Cache Usage alarm* provided by the monitoring template.

When Dict. Cache Usage is at or above its threshold, and Library Cache Usage is at or above its threshold, this is often because the shared pool is insufficient. An insufficient shared pool may degrade search performance. This problem can be handled by increasing `SHARED_POOL_SIZE`#.

#

With Oracle 10g, when the initial parameter `SGA_TARGET` is specified, since the `SGA` configuration parameter is automatically adjusted, no action needs to be performed when thresholds for warning or abnormal conditions are exceeded.

Monitoring sorts performed on disk as a ratio of all sorts, when memory or disk I/O is used

The sorts performed on disk as a ratio of all sorts when memory or disk I/O is used can be monitored using the *Disk Sorts alarm* provided by the monitoring template.

When Disk Sort is at or above its threshold, this is often because the memory for sort operations is insufficient. When the memory for sort operations is insufficient, a disk sort is performed using the `TEMPORARY` segment. This may degrade performance, but the problem can be handled by increasing the value of `SORT_AREA_SIZE`.

Monitoring the "search all" ratio

The "search all" ratio can be monitored using the *Full Table Scans alarm* provided by the monitoring template.

When Full Table Scans is at or above its threshold, this is often because "search all" occurs, degrading search performance. Search performance can be tuned by narrowing down the search targets.

1.3.4 Data update processing performance

Oracle can be monitored to prevent performance degradation for Oracle Database data update processing. The following items can be used in Oracle monitoring to prevent degraded performance for data update processing:

- Buffer cache usage
- Database data and rollback block contention
- Free list contention

(1) Primary fields related to data update processing performance

The following table lists the records and fields related to data update processing performance.

Table 1–2: Records and fields related to data update processing performance

Record used	Field used	Value measured (example)
`PI`	`Cache Hit %`	Buffer cache usage.
	`Buffer Busy Wait %`	Buffer busy wait ratio.
	`Free List Wait Events`	Free list wait events.

(2) Monitoring methods

Monitoring buffer cache usage

Buffer cache usage can be monitored by using the *Buffer Cache Usage alarm* provided by the monitoring template.

Monitoring database data and rollback block contention

Database data and rollback block contention can be monitored by using the *Buffer Cache Waits alarm* provided by the monitoring template. Monitoring database data and rollback block contention alongside buffer cache usage can be very useful.

When Buffer Cache Usage is at or below its threshold, and Buffer Cache Waits is at or above its threshold, this is often because the buffer cache is insufficient. When the buffer cache is insufficient, disk I/O is performed, which may degrade search performance. This problem can be handled by increasing the size of `DB_CACHE_SIZE`.

Monitoring free list contention

The free list ratio can be monitored by using the *Free List Waits alarm* provided by the monitoring template.

When Free List Waits is at or above its threshold, this is often due to insufficient segment free lists. Insufficient free lists may degrade performance for data update processing. This problem can be handled by adding the `FREE LISTS` option to the `STORAGE` operator, to rebuild the table.

1.3.5 Oracle instance operation monitoring

Oracle server operation can be monitored.

The following item can be used for Oracle server operation monitoring:

- Oracle instance operation monitoring

(1) Records and fields related to Oracle instance operation

The following table lists the records and fields related to Oracle instance operation.

Table 1–3: Records and fields related to Oracle instance operation

Record used	Field used	Value measured (example)
`PD_PDIA`	`Availability`	Availability status. Valid values are `0` (stopped) or `1` (running).

(2) Monitoring method

Monitoring Oracle instance operation

Oracle instance operation can be monitored by using the *Server Status alarm* provided by the monitoring template.

If the Availability value is `0`, it is determined that connection cannot be established with the Oracle database. You can remedy this problem by checking the state of the Oracle Database or listener.

1.3.6 Disk monitoring

Changes in disk capacity can be monitored for running Oracle databases to ensure stable Oracle database operation.

The following item can be used for monitoring changes in the disk capacity of a running Oracle database:

- Tablespace capacity

(1) Records and fields related to tablespace

The following table lists the records and fields related to tablespace.

Table 1–4: Records and fields related to tablespace

Record used	Field used	Value measured (example)
PD_PDTS	Free %	Ratio of free space.

(2) Monitoring methods

Monitoring tablespace capacity

Tablespace capacity can be monitored by using the *Tablespace Usage alarm* provided by the monitoring template.

If Tablespace Usage is at or below its threshold, free space is insufficient. After you have identified the tablespace in the PD_PDTS record for which the problem occurred, check the tablespace usage and secure sufficient free space.

1.3.7 Monitoring wait events concerning REDO log file

When the size of REDO log file is small on an Oracle server, wait events may occur. Thus, it is crucial to monitor the frequency of wait events concerning REDO log file:

- Monitoring the frequency of wait events concerning REDO log file

(1) Records and fields related to the frequency of wait events concerning REDO log file

The following table lists the records and fields related to the frequency of wait events concerning REDO log file.

Table 1–5: Records and fields related to wait events concerning REDO log file

Record used	Field used	Value measured (example)
PI	Redo Log Space Requests	Number of times that waiting is required until the disk space is allocated to a REDO log entry because the active redo log file is full.

(2) Monitoring methods

Monitoring wait events concerning REDO log file

Wait events concerning REDO log file can be monitored by using the *Redo Log Contention alarm* provided with the monitoring template.

When Redo Log Contention is at or above its threshold, wait events concerning REDO log file occurs, often because the REDO log file is too small.

This problem can be handled by increasing the size of the REDO log file.

2 Installation and Setup

This chapter describes the procedures for installing and setting up PFM - RM for Oracle. For details about how to install and set up an entire Performance Management system, see the chapter on installation and setup for Windows in the *JP1/Performance Management Planning and Configuration Guide*.

2.1 Installation and setup (Windows)

This section describes the procedures for installing and setting up PFM - RM for Oracle.

2.1.1 Preparation for installing and setting up PFM - RM for Oracle (Windows)

Check the following before installing and setting up PFM - RM for Oracle.

(1) OS requirements

PFM - RM for Oracle runs on the following OSs:

- Windows Server 2012
- Windows Server 2012 R2
- Windows Server 2016
- Windows Server 2019

(2) Network environment settings

The following describes the network environment required to run Performance Management.

(a) IP address settings

The PFM - RM for Oracle host must be set up in a network environment where IP addresses can be resolved from host names. PFM - RM for Oracle will not start in an environment where IP addresses cannot be resolved.

PFM - RM for Oracle can run in an IPv6 environment and dual stack environment in addition to an IPv4 environment. To run PFM - RM for Oracle in an IPv6 environment, the monitored Oracle database must support IPv6 environments.

You can use the real host name as a monitoring host name (a host name used in Performance Management system).

In a Windows system, set up the environment so that an IP address can be resolved from the host name returned by the `hostname` command. In a UNIX system, set up the environment so that an IP address can be resolved from the host name returned by the `uname -n` command.

For details about the configuration of a monitoring host name, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*. Note that IP addresses set in the `jpchosts` file are not used for resolving the IP addresses of monitoring targets.

Use one of the following methods to set the host name and IP address of a host monitored by Performance Management programs:

- Host information settings file for Performance Management (`jpchosts` file)
- `hosts` file
- DNS (Domain Name System)

Use a real host name or an alias name for the monitoring host name.

- When using a real host name

In a Windows system, set up the environment so that an IP address can be resolved from the host name returned by the `hostname` command.

Note that although Performance Management can operate in a DNS environment, it does not support host names in FQDN (Fully Qualified Domain Name) format. Therefore, specify a monitoring host name without the domain name.

- When using an alias name

  Set up the environment so that an IP address can be resolved from the specified alias name.

For details about the structure of a monitoring host name, see the chapter that describes how to change the system configuration in the *JP1/Performance Management Planning and Configuration Guide*.

Notes on setting IP addresses:

- If you intend to use Performance Management within multiple LAN environments, set the IP addresses in the `jpchosts` file. For details, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.
- Performance Management cannot operate on the hosts to which IP addresses are assigned dynamically by DHCP. Make sure that all the hosts on which Performance Management programs are installed are configured with user-specified static IP addresses.

Performance Management supports IPv6 environments as well as IPv4 environments as a network configuration. Therefore, Performance Management can operate even in a network configuration in which both an IPv4 environment and an IPv6 environment are used.

PFM - RM for Oracle can communicate with PFM - Manager via IPv6. Note that this explanation applies only when the OS of a host on which PFM - RM for Oracle and PFM - Manager are installed is Windows or Linux.

For details about the scope of communication in an environment with both IPv4 and IPv6, see *M. About Communication in IPv4 Environments and IPv6 Environments*.

When you want to use IPv6 for communication between PFM - Manager and PFM - RM for Oracle, the settings for using IPv6 must be enabled for both the PFM - Manager host and the PFM - RM host. In addition, before installing PFM - RM for Oracle, you need to enable the use of IPv6 on the PFM - RM host. You have to execute the `jpcconf ipv6 enable` command to enable this setting. If this setting is already enabled, however, you do not need to execute the command. If you want to check whether the use of IPv6 is enabled, execute the `jpcconf ipv6 display` command.

For details about the `jpcconf ipv6 enable` command and `jpcconf ipv6 display` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*. For details about the conditions or occasions for executing the `jpcconf ipv6 enable` command, see the chapter that describes network configuration examples in an environment that includes IPv6 in the *JP1/Performance Management Planning and Configuration Guide.*

When you use IPv6 for communication between a monitored host and PFM - RM for Oracle, specify the name of a monitored host where name resolution can be performed.

Communication between PFM - RM for Oracle and a monitoring target is performed with an IP address that can be resolved. Also, if an IPv4 environment and an IPv6 environment are both used, and communication between PFM - RM for Oracle and the monitoring target fails with an IP address that can be resolved, the communication is not retried by using another IP address.

For example, if communication fails when IPv4 is used, IPv6 is not used to retry communication. Similarly, if communication fails when IPv6 is used, IPv4 is not used to retry communication. Make sure beforehand that a connection can be established.

(b) Port number settings

The following table shows the default port numbers assigned to the services of Performance Management programs. For other services and programs, available port numbers are automatically assigned each time they are started. If you use Performance Management in a firewall environment, use fixed port numbers. For details about how to set fixed port numbers, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

Table 2–1: Default port numbers for Performance Management program services (in Windows)

Service description	Service name	Parameter	Port number	Remarks
Service configuration information management facility	Name Server	`jp1pcnsvr`	22285	The port number used by the Name Server service of PFM - Manager. This port is set up on every Performance Management host.
Service status management facility	Status Server	`jp1pcstatsvr`	22350	The port number used by the Status Server service of PFM - Manager and PFM - Base. This port is set up on the hosts on which PFM - Manager and PFM - Base are installed.
Monitoring console communication facility	View Server	`jp1pcvsvr`	22286	The port number used by the View Server service of PFM - Manager. This port is set up on the hosts on which PFM - Manager is installed.
Web service facility	Web Service	--	20358	The port number used by the Web Service service of PFM - Web Console.
Web container facility	Web Console	--	20359 20360	The port number used by the Web Console service of PFM - Web Console.
JP1/SLM linkage facility	JP1/ITSLM	--	20905	The port number set by JP1/SLM.

Legend:

--: None

Ensure that the network is set up to allow communication using these port numbers, which are used by PFM - RM for Oracle.

(3) OS user permission required to install PFM - RM

To install PFM - RM for Oracle, you must have the following permissions:

[When the UAC function is used]

You must log in to the host to be installed with Administrators permissions or be upgraded to Administrators permissions when you start the installer.

[When the UAC function is not used]

You must log in to the host to be installed with Administrators permissions.

(4) Prerequisite programs

This subsection describes the prerequisite programs required to install PFM - RM for Oracle.

The host on which PFM - RM for Oracle is installed is hereafter called "PFM - RM host".

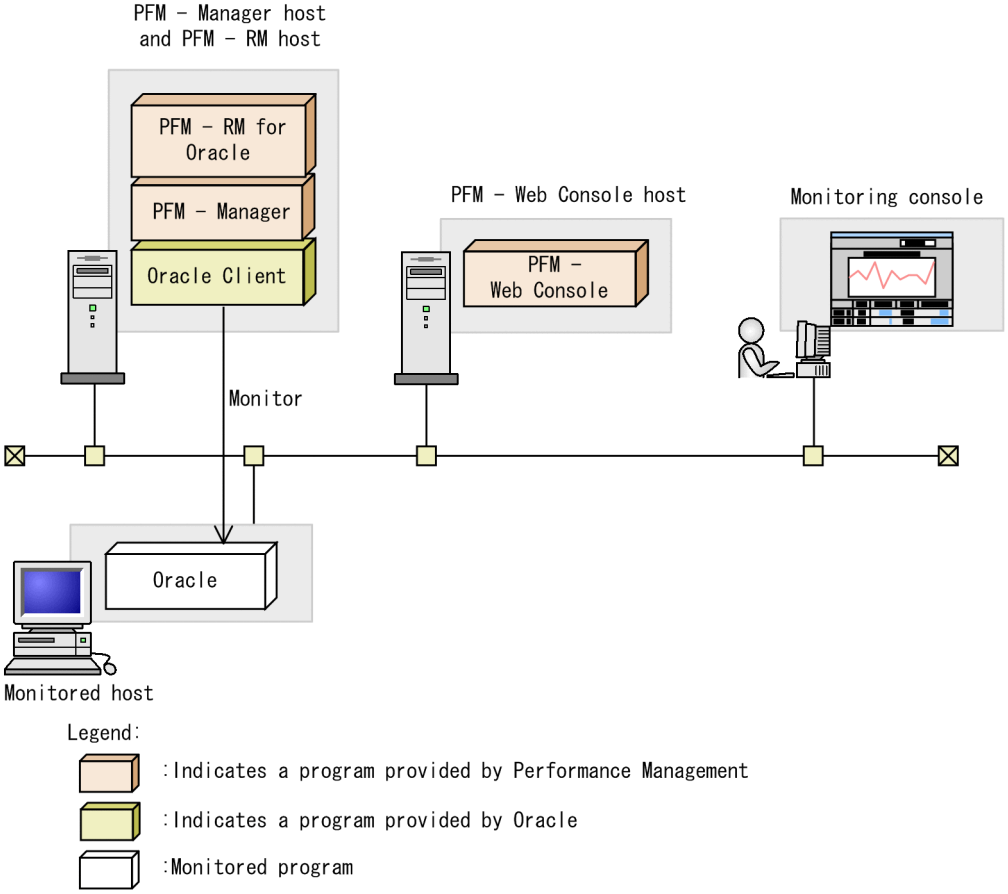
There are roughly two cases in the program configuration of PFM - RM for Oracle. The actual program configuration needs to be determined based on the system configuration.

Install PFM - RM for Oracle on the PFM - Manager host

This configuration is the program configuration for installing PFM - RM for Oracle on the same host on which PFM - Manager is installed. In this program configuration, you need to install Oracle Client on the same host on which PFM - RM for Oracle is installed.

The following figure 2-1 shows the program configuration in this case:

Figure 2–1: Program configuration (installation of PFM - RM for Oracle on the PFM - Manager host (Windows))

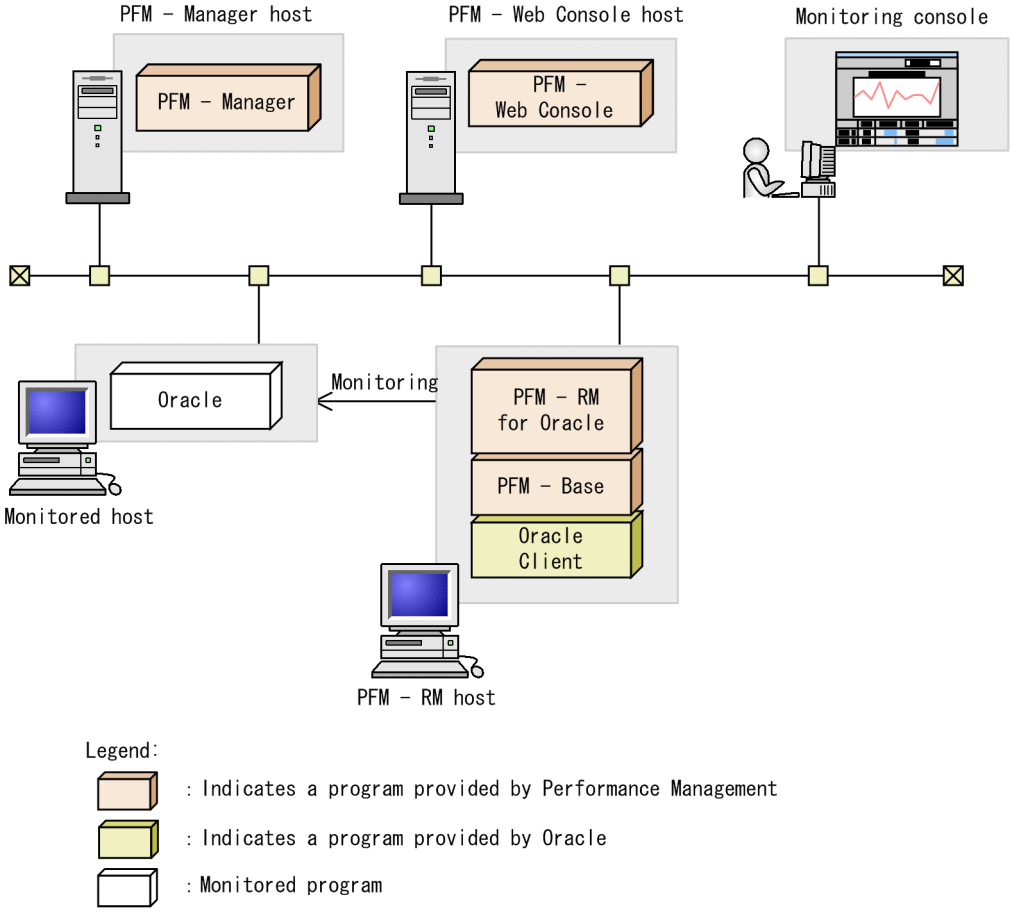


Install PFM - RM for Oracle on the different host from PFM - Manager host

This configuration is the program configuration for installing PFM - RM for Oracle on the different host from PFM - Manager host.

In this program configuration, you need to install PFM - Base and Oracle Client on the same host on which PFM - RM for Oracle is installed. The following figure shows the program configuration in this case:

Figure 2–2: Program configuration (installation of PFM - RM for Oracle on the same host on which PFM - Base and Oracle Client are installed (Windows))



(a) Monitoring target programs

The monitoring target programs of PFM - RM for Oracle are as follows:

- Oracle Database Standard Edition
- Oracle Database Standard Edition One
- Oracle Database Standard Edition 2
- Oracle Database Enterprise Edition

Note that when a monitoring target program running on a virtualized OS is being monitored, PFM - RM for Oracle monitors what the monitoring target program can perform on the virtualized OS.

(b) Performance Management programs

Install PFM - RM for Oracle and PFM - Base on the PFM - RM host.

PFM - Base is a prerequisite program for PFM - RM for Oracle. Only one instance of PFM - Base is required, even when multiple instances of PFM - RM are installed on one host.

Note that you do not need to install PFM - Base if PFM - Manager and PFM - RM for Oracle are installed on the same host.

To monitor Oracle operation using PFM - RM for Oracle, PFM - Manager and PFM - Web Console are required.

(5) Installation and setup in a cluster system

When you install and set up PFM - RM in a cluster system, the prerequisite network environment and program configuration is different from those for a normal system. There are also additional tasks that must be performed on the executing nodes and standby nodes. For details, see *3. Operating PFM - RM for Oracle in a Cluster System*.

(6) Preparation for collecting data in the event of an error

If a problem occurs, user mode process dumps, and other data might be required. To obtain these dumps when a problem has occurred, use one of the following methods to set up output of these dumps in advance.

You can use the following registry setting to obtain user mode process dumps of data that you can investigate for troubleshooting when an application program terminates:

```
\\HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\Windows Error Reporting\Loca
lDumps
```

Specify the following registry key values:

- DumpFolder: `REG_EXPAND_SZ` *dump-output-folder-name*
  Permission to write to the output destination folder is needed.
- DumpCount: `REG_DWORD` *Number-of-dumps-to-be-saved*
- DumpType: `REG_DWORD` 2

> **Important**
>
> - When you set the registry to output user mode process dumps, user mode process dumps are output for not only JP1 programs, but also for other application programs. Make sure you keep this in mind when you specify that user mode process dumps are to be output.
> - When user mode process dumps are output, available disk space can be adversely affected. Make sure that you specify a dump output folder that has enough disk space for the dumps.

(7) Cautionary notes

Note the following when installing and setting up Performance Management.

(a) Precautions regarding environment variables

Because Performance Management uses `JPC_HOSTNAME` as an environment variable, do not set it as a user-specific environment variable, as this will prevent Performance Management from operating properly.

(b) Notes on installing and setting up multiple Performance Management programs on same host

With Performance Management, you can install PFM - Manager, PFM - Web Console, and PFM - RM for Oracle on the same host. When doing so, note the following:

- When PFM - Manager and PFM - RM for Oracle are installed on the same host, PFM - Base is not required. In this case, PFM - Manager is a prerequisite program for PFM - RM for Oracle and must be installed before PFM - RM for Oracle is installed.

- You cannot install PFM - Base and PFM - Manager on the same host. If you want to install PFM - Manager on a host on which PFM - Base and PFM - RM for Oracle are already installed, uninstall all Performance Management programs, and then install PFM - Manager and PFM - RM for Oracle in that order. The same applies when you install PFM - Base on a host on which PFM - Manager and PFM - RM for Oracle are already installed: you must uninstall all Performance Management programs, and then install PFM - Base and PFM - RM for Oracle in that order.
- If you install PFM - RM for Oracle on a host on which PFM - Manager is already installed, the connection-target PFM - Manager will be the instance of PFM - Manager on the local host, and cannot change it to that on the remote host. If you want PFM - RM for Oracle to connect to PFM - Manager on a remote host, ensure that PFM - Manager is not installed on the host on which you install PFM - RM for Oracle.
- If you install PFM - Manager on a host on which PFM - RM for Oracle is already installed, the connection-target PFM - Manager is reset to the local host. See the setting results that are output to the common message log.
- If you install PFM - RM for Oracle on a host on which PFM - Web Console in already installed, close all the browser windows before you install the program.
- When you perform a new installation of a Performance Management program, the status management facility will be enabled by default. To change the setting of the status management facility, see the chapter on error detection for Performance Management in the *JP1/Performance Management User's Guide*.

Hint:

To improve system performance and reliability, we recommend running PFM - Manager, PFM - Web Console, and PFM - RM for Oracle on separate hosts.

(c) Notes on upgrading PFM - RM for Oracle

Before you perform version upgrade installation, you need to perform the procedure described in *2.3.2(1) (c) Deleting the objects registered in the Oracle Database*. Complete version upgrade installation and then perform the procedure in *2.1.4(3) (c) Registering objects in the Oracle Database*.

For details about notes on upgrading the versions of Performance Management programs, see the section describing the notes on version upgrading in the chapter that explains installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

For details about notes on upgrading the version of PFM - RM for Oracle, see *H. Migration Procedure and Notes on Migration*.

For details about upgrading, see the *JP1/Performance Management Planning and Configuration Guide*.

(d) Other cautionary notes

- To use PFM - RM for Oracle to monitor an Oracle Database, you must install and set up Oracle Client 64-bit to connect to the Oracle Database.

  Note that you can select *Administrator* or *Runtime* as the installation type for Oracle Client 64-bit. Instant Client is not supported.

  When you mistook to install Oracle Client by using Instant Client as the installation type, do not install it by using [Administrator] or [Runtime] to the same ORACLE_HOME. In this case, install Oracle Client to the other ORACLE_HOME or install it after deleting Instant Client.
- If the monitoring-target program is Oracle Database 12c Release 1, the program can only be monitored in a non-CDB environment and cannot be monitored in a CDB environment.
- If the monitoring-target program is Oracle Database 12c Release 2 or later, in addition to the program in a traditional non-CDB environment, PDBs and the root container (`CDB$ROOT`) in a CDB environment can be monitored. Monitoring application containers (an application root and application PDBs) is not supported.

- When you perform a new installation of PFM - RM for Oracle in an environment where no other Performance Management program has been installed, make sure that there are no files or folders in the installation folder.
- You may be prompted to restart the system if you attempt to install PFM - RM for Oracle while another Performance Management program or service is running. Alternatively, you may be prompted to restart the system while Windows Event Viewer or another program that references Performance Management files is running. If this occurs, restart the system as indicated in the message, and complete the installation.
- The installer may be unable to expand the files required for installation if you attempt to install PFM - RM for Oracle in the following cases:
  - While a Performance Management program or service is running or while another program that references Performance Management files (for example, Windows Event Viewer) is running
  - When there is insufficient disk space
  - When you do not have the required folder permission

  Stop any active Performance Management programs or services or other programs that reference Performance Management files, and then perform the installation again. If the problem is caused by insufficient disk space or a lack of the appropriate folder permissions, fix the problem and then perform the installation again.
- When you install Performance Management programs, check whether the following security-related programs are installed. If they have been installed, take appropriate action according to the explanations below.
  - Security monitoring program

    Stop the security monitoring program or change the settings so that the installation of Performance Management programs will not be interrupted.
  - Virus detection program

    Stop the virus detection program before you install Performance Management programs.

    If a virus detection program is running during the installation of Performance Management programs, the installation processing might slow down, installation might not be executable, or the programs might not be able to be installed correctly.
  - Process monitoring program

    Stop the process monitoring program or change the settings. Also, specify settings that prevent the services or processes of Performance Management and common components from being monitored.

    If the process monitoring program starts or stops these services or processes during the installation of Performance Management programs, installation might fail.
- Do not specify the following folder as the installation-folder. If so, the installation process may fail:
  system-folder`\Program files`
- This software is a Hitachi program product that conforms to the disk copy installation of JP1/ServerConductor/Deployment Manager and Hitachi Compute Systems Manager Deployment Manager Plug-in, or the copy functionality using conversion to image files that is provided by a virtual platform. About the disk copy installation, see notes on installing replicated disks in the manual *JP1/Performance Management Planning and Configuration Guide*.

2.1.2 Installation and setup workflow (Windows)

The following figure shows the workflow for installing and setting up PFM - RM for Oracle.

Figure 2–3: Installation and setup workflow (Windows)

For details about the installation and setup procedures for PFM - Manager and PFM - Web Console, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

2.1.3 Installation procedure (Windows)

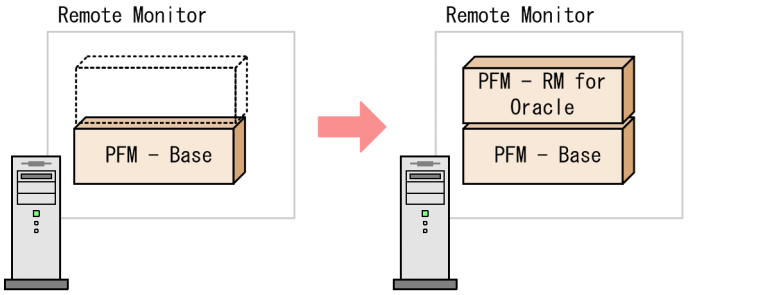
This subsection explains the order in which the component programs of PFM - RM for Oracle are to be installed, and describes how to install these programs from the supplied medium.

(1) Order of installation

Install PFM - Base, and then PFM - RM for Oracle. PFM - Base must be installed on the host before you can install PFM - RM for Oracle.

If you want to install PFM - RM for Oracle and PFM - Manager on the same host, install PFM - Manager before you install PFM - RM for Oracle.

Multiple instances of PFM - RM on the same host can be installed in any order.



1. Install PFM - Base.
2. Install PFM - RM for Oracle.

(2) How to install the programs

You can install Performance Management programs on a Windows host either by using the supplied medium, or by using JP1/Software Distribution to perform a remote installation. For details about how to use JP1/Software Distribution, see the *Job Management Partner 1/Software Distribution Administrator's Guide Volume 1*, for Windows systems.

Precaution:

If user account control (UAC) functionality is enabled on the OS, the User Account Control dialog box might be displayed during installation. If this dialog box is displayed, click the **Continue** button to continue installation. If you click the **Cancel** button, the installation is canceled.

To install programs from the supplied medium:

1. Log on to the host on which you intend to install the programs as an administrator.
2. If any Performance Management services are running on the local host, stop all of them.

   The services you are going to stop are the Performance Management services running on both the physical and logical hosts. For details about how to stop services, see the chapter that explains startup and termination of Performance Management in the *JP1/Performance Management User's Guide*.
3. Insert the supplied medium into the machine and execute the installer.

   Proceed with installation by following the instructions of the installer that starts.

   The following items, which have been set upon the installation of PFM - Manager or PFM - Base, are displayed for your information:

   - User information
   - Installation folder
   - Program folder
4. Click the **Install** button to start the installation process.

2.1.4 Setting up PFM - RM for Oracle (Windows)

This subsection describes how to set up PFM - RM for Oracle for operation.

〈Option〉 indicates an item that may or may not be required depending on your operating environment, or an optional item that you can set if you do not wish to use the default.

(1) Register PFM - RM for Oracle 〈Option〉

To perform integrated management of PFM - RM for Oracle using PFM - Manager and PFM - Web Console, you must register PFM - RM for Oracle with PFM - Manager and PFM - Web Console.

If PFM - RM for Oracle is already registered in PFM - Manager and PFM - Web Console, you do not have to follow the procedure described below. If PFM - RM for Oracle is not registered yet, manually register PFM - RM for Oracle according to the procedure.

You can determine whether manual registration of PFM - RM for Oracle is necessary by referring to the conditions described below.

Manually registering PFM - RM for Oracle in PFM - Manager

When all of the following conditions apply, manually register PFM - RM for Oracle in PFM - Manager:

- The PFM - RM for Oracle to be installed is of a product version that is not specified in the *Release Notes* for PFM - Manager.
- PFM - RM for Oracle is installed on a host other than PFM - Manager.

Manually registering PFM - RM for Oracle in PFM - Web Console

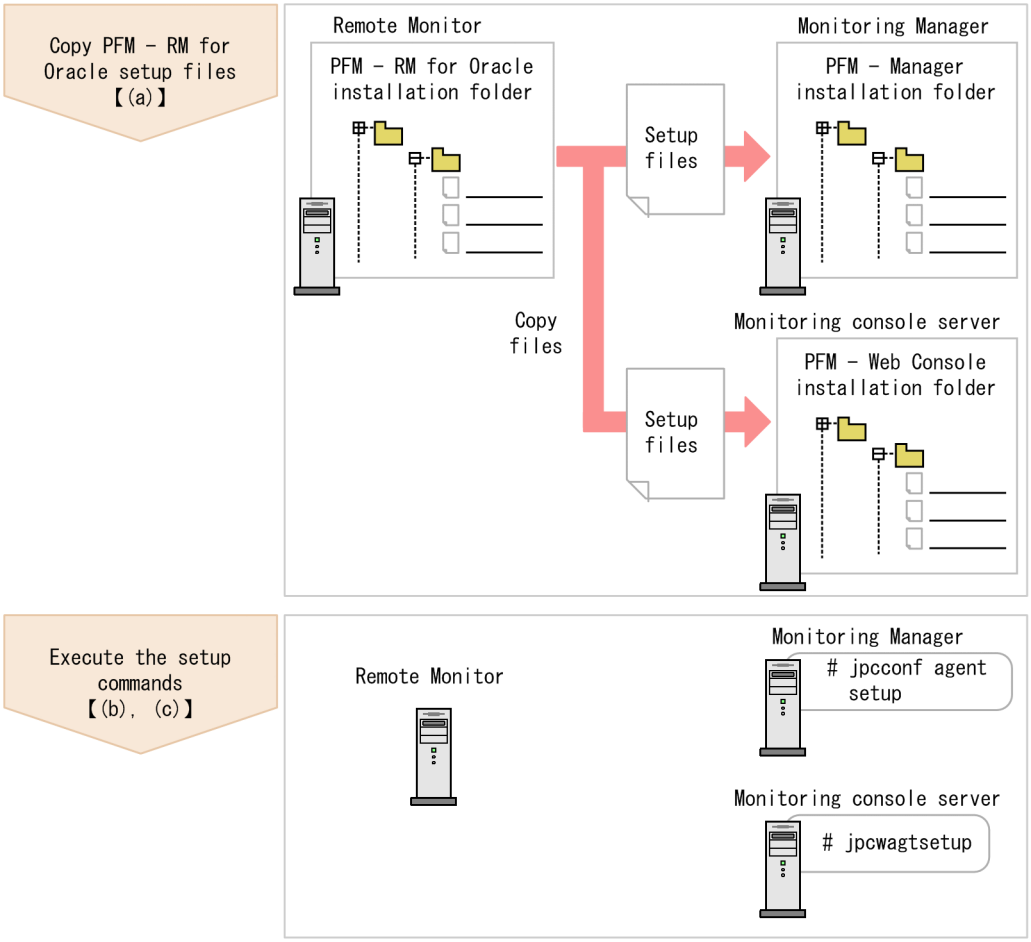
When the following condition applies, manually register PFM - RM for Oracle in PFM - Web Console:

- The PFM - RM for Oracle to be installed is of a product version that is not specified in the *Release Notes* for PFM - Web Console.

If, however, the *Release Notes* for PFM - RM for Oracle state that it is necessary to execute the setup command, execute the setup command.

The following figure shows the flow of PFM - RM for Oracle registration.

Figure 2–4: Flow of PFM - RM for Oracle registration



Legend:

【 】 : Text reference

Notes

- Register PFM - RM for Oracle before setting up an instance environment.
- You do not need to register a new instance of an already registered version of PFM - RM for Oracle when you add it to the Performance Management system.
- When you have installed different versions of PFM - RM for Oracle on different hosts, set up the older version before the newer version.
- When you install PFM - RM for Oracle on the same host as PFM - Manager, the `jpcconf agent setup` command is executed automatically, and the following message is output to the common message log: KAVE05908-I `New agent setup (`*pfm-agent-service-key*`) ended successfully. (version=`*version*`)`. Check the result of command execution in the log file. If execution was unsuccessful, try it again. For details about how to execute commands, see the chapter on commands in the manual *JP1/Performance Management Reference*.
- Registration of PFM - RM for Oracle creates the **RM Oracle** folder in **Reports** window and **Alarms** window of PFM - Web Console. If the RM `Oracle` file or folder already exists on the **Reports** window, rename the file or folder before registering PFM - RM for Oracle.

(a) Copy the PFM - RM for Oracle setup files

Copy the setup files from the host on which you installed PFM - RM for Oracle (PFM - RM host) to the hosts on which PFM - Manager and PFM - Web Console are installed.

To copy the files:

1. If PFM - Web Console is running, stop it before copying the files.
2. Copy the PFM - RM for Oracle setup files in binary mode.
   The following table shows the location of the setup files and where they should be copied.

   Table 2–2: Setup files to be copied

PFM - RM for Oracle setup file	Destination		
	PFM program name	OS	Destination folder
installation-folder\setup\jpcagt1w.EXE	PFM - Manager	Windows	*installation-folder*\setup
installation-folder\setup\jpcagt1u.Z		UNIX	/opt/jp1pc/setup/
installation-folder\setup\jpcagt1w.EXE	PFM - Web Console	Windows	*installation-folder*\setup
installation-folder\setup\jpcagt1u.Z		UNIX	/opt/jp1pcwebcon/setup/

(b) Execute the setup command on the PFM - Manager host

On the PFM - Manager host, execute the following command to set up PFM - RM for Oracle:

```
jpcconf agent setup -key RMOracle
```

Notes on executing the command:

If any Performance Management programs or services are still running on the local host when you execute the `jpcconf agent setup` command, an error may occur. If an error occurs, make sure that all Performance Management programs and services have completely stopped, and then execute the `jpcconf agent setup` command again.

You can then delete the PFM - RM for Oracle setup files remaining on the PFM - Manager host.

(c) Execute the setup command on the PFM - Web Console host

On the PFM - Web Console host, execute the following command to set up PFM - RM for Oracle:

```
jpcwagtsetup
```

You can then delete the PFM - RM for Oracle setup files remaining on the PFM - Web Console host.

(2) Create an Oracle account to be used in PFM - RM for Oracle

To monitor an Oracle Database and collect performance data by using PFM - RM for Oracle, you must perform either of the following setting tasks:

- Set the `sys` account as the account used to monitor the Oracle Database from PFM - RM for Oracle
- Create a special Oracle account with system privileges, and set it as the account used to monitor the Oracle Database from PFM - RM for Oracle

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, PDBs and the root container (CDB$ROOT) can be monitored. When you create Oracle accounts to monitor PDBs and the root container in a CDB configuration, create the following users:

- If you create a user for monitoring the root container (CDB$ROOT)

  A common user with system privileges for CDB$ROOT listed in *Table 2-3*

  When the root container (CDB$ROOT) that is being monitored, collecting performance data is different by monitored account. For details, see *5. List of records for PFM - RM for Oracle* or descriptions of each record field.

  This is difference of setting for collecting PDB's performance data. For details, see your Oracle documentation.
- If you create a user for monitoring PDBs

  A local user with system privileges for the PDBs to be monitored listed in *Table 2-3*

If you create Oracle accounts by executing the mk_rmus.sql script, the following users can be created:

- If the monitoring target is Oracle Database 11g Release 2 or earlier, or Oracle Database 12c Release 1 or later in a non-CDB configuration

  A user with system privileges listed in *Table 2-3*
- If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration
  - A common user with system privileges for CDB$ROOT listed in *Table 2-3*
  - A local user with system privileges for the PDBs to be monitored listed in *Table 2-3*

The following table lists the operations that PFM - RM for Oracle performs for the Oracle Database to collect performance data. The table also lists the system privileges required to perform the operations with the Oracle account.

Table 2–3: Operations for the Oracle Database and required system privileges

Operations that PFM - RM for Oracle performs for the Oracle Database	System privileges required to perform the operations
• Searching the static data dictionary view • Searching the dynamic performance view • Executing the listener control utility • Acquiring the execution schedule of the selected SQL • Executing a stored package specific to PFM - RM for Oracle	• CREATE SESSION • CREATE TABLE • CREATE PROCEDURE • SELECT ANY DICTIONARY • SELECT ANY TABLE • INSERT ANY TABLE • DELETE ANY TABLE • UPDATE ANY TABLE • CREATE ANY INDEX • ALTER ANY INDEX • UNLIMITED TABLESPACE (This privilege is not needed when an assignment limit that allows writing to the default tablespace of the account used for monitoring has been set.)

The sys account has the system privileges shown in Table 2-3. When the sys account cannot be used for Oracle Database monitoring due to security requirements, use an Oracle account with the system privileges shown in Table 2-3.

When creating an Oracle account for monitoring the Oracle Database, without using the mk_rmus.sql script, grant the appropriate privileges for operations. By granting these privileges, the minimum necessary privileges can be granted to the Oracle account. When granting privileges according to role, do so explicitly (using GRANT *privileges*...). For details about the privileges needed for each operation, see *I. Precautions Regarding Permissions*.

The following table lists the information necessary to execute the `mk_rmus.sql` script and create an Oracle account. Check the information before starting setup operations.

Table 2–4: Information required to create an Oracle account

Item	Description
`Enter username`	Specifies the name of the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the `user` parameter of the `CREATE USER` statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. The default is `RMAGT1`. Note: If you specify an existing account in the database as an account to be used by an instance of PFM - RM for Oracle, a script error occurs. Always check the account names existing in the database in advance, and specify an account that will be used only for the instance of PFM - RM for Oracle.
`Enter password`	Specifies the password for the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the `BY password` parameter of the `IDENTIFIED` clause in the `CREATE USER` statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. This is a mandatory item.
`Enter default tablespace`	Specifies the default tablespace used by the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the `DEFAULT TABLESPACE` clause in the `CREATE USER` statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. This is a mandatory item. Note: Do not specify the `SYSTEM` or `INDEX` tablespace as the default tablespace. Before specifying the default tablespace, make sure that no problem occurs when a package for PFM - RM for Oracle is registered in the tablespace. Alternatively, create an exclusive tablespace for PFM - RM for Oracle, and then specify the tablespace as the default tablespace.
`Enter default temporary tablespace`	Specifies the default temporary tablespace used by the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the `TEMPORARY TABLESPACE` clause in the `CREATE USER` statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. This is a mandatory item. Note: Do not specify the `SYSTEM`, `INDEX`, or `USERS` tablespace as the default temporary tablespace. Before specifying the default temporary tablespace, make sure that no problem will occur if the tablespace is used as the default temporary tablespace. Alternatively, create an exclusive tablespace for PFM - RM for Oracle, and then specify the tablespace as the default temporary tablespace.

Notes:

- Make sure that the value of each item consists of only 7-bit ASCII alphanumeric characters that do not exceed 30 bytes. If the value is longer than 30 bytes or includes a character that is not a 7-bit ASCII alphanumeric character, the script may operate incorrectly.
- Make sure that the value of each parameter is a nonquoted identifier described in the Schema Object Naming Rules. If you specify a value that is not a nonquoted identifier, the script may operate incorrectly. For details about the Schema Object Naming Rules and nonquoted identifiers, see your Oracle documentation.

- If you create a common user, by executing the mk_rmus.sql script, for monitoring the root container (CDB $ROOT) of Oracle Database 12c Release 2 or later in a CDB configuration, the default tablespace and default temporary tablespace that are specified in the mk_rmus.sql script must be included in all containers that belong to the CDB. For that reason, before executing the mk_rmus.sql script, create the default tablespace and default temporary tablespace in all containers that belong to the CDB. If the mk_rmus.sql script is executed without satisfying the requirements for creating a common user, the creation might fail and the KAVL18506-E message might appear. For details about the requirements for creating a common user, see the Oracle Database documentation.
- If you want to check the details of an account created by mk_rmus.sql, see DBA_USERS, which is a static dictionary view for the monitoring-target Oracle Database.

  The following example shows how to view the tablespace for the account R4O in the static data dictionary view DBA_USERS. If it is clear from the execution results of this SQL statement that the account has been created in the wrong tablespace, delete the account, and then re-create it using mk_rmus.sql.

Example:

To check the details of Oracle account R40 in Windows:

1. From the command prompt, use the sys account to connect to SQL*Plus.

   sqlplus "sys *account* /*sys-account-password*@*net-service-name-for-the-monitoring-target-database* AS SYSDBA"

2. Use SQL*Plus to execute the following SQL statement:

   ```
   SQL>select DEFAULT_TABLESPACE, TEMPORARY_TABLESPACE from DBA_USERS
   where USERNAME='R4O';
   ```

3. Check the execution results. For example, you can check the default tablespace from the DEFAULT_TABLESPACE column and the default temporary tablespace from the TEMPORARY_TABLESPACE column.

Note:

The method for connecting to SQL*Plus with the sys account may differ according to the Oracle version. For details, see the Oracle documentation.

Use SYSDBA privileges to connect to the Oracle Database that you want to monitor.

For details about the CREATE USER statement, see your Oracle documentation.

The following procedure shows how to create an Oracle account. Before creating an Oracle account, make sure that the tablespaces and other required resources have been prepared.

To create an Oracle account:

1. Set up an environment where the sqlplus Oracle command can be executed.

   For details about Oracle environment setup, see your Oracle documentation.

2. Navigate to the following folder, which contains mk_rmus.sql provided by PFM - RM for Oracle:

   installation-folder\agt1\agent\sql

3. Execute the mk_rmus.sql script for the monitoring-target Oracle Database.

   Example:

   If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

   sqlplus *Oracle-account*/*password-for-the-Oracle-account*@*net-service-name-for-the-monitoring-target-database* @mk_rmus.sql

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

- If you create a local user for a PDB

sqlplus *Oracle-account/password-for-the-Oracle-account@net-service-name-for-the-monitoring-target-PDB* @mk_rmus.sql

- If you create a common user for the root container (CDB$ROOT)

sqlplus *Oracle-account/password-for-the-Oracle-account@net-service-name-for-the-monitoring-target-CDB$ROOT* @mk_rmus.sql

Notes:

- The sqlplus command is provided by Oracle Corporation.
- The Oracle account with which the mk_rmus.sql script is executed must be granted the CREATE USER, CREATE SESSION and GRANT ANY PRIVILEGE system privileges before the script is executed.
- If the SYS account is used to execute the mk_rmus.sql script, an error may occur unless the AS SYSDBA option is specified.
- Establish either a SYSDBA connection to the monitoring-target Oracle Database.

  The following shows an example of the mk_rmus.sql script:

  Example:

  If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

  sqlplus "*sys/password-for-the-sys@net-service-name-for-the-monitoring-target-database* AS SYSDBA" @mk_rmus.sql

  If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

  - If you create a local user for a PDB

  sqlplus "*sys/password-for-the-sys@net-service-name-for-the-monitoring-target-PDB* AS SYSDBA" @mk_rmus.sql

  - If you create a common user for the root container (CDB$ROOT)

  sqlplus "*sys/password-for-the-sys@net-service-name-for-the-monitoring-target-CDB$ROOT* AS SYSDBA" @mk_rmus.sql

- When the mk_rmus.sql script is executed, the execution results are output to a spool file. Output is successful only when the current folder is changed to the folder shown in step 2 when the script is executed.

4. Set the parameters that are required to create an Oracle account.

   Enter the values for the items listed in Table 2-4 as prompted by the command. All items are mandatory. To use the default value displayed for an item, only press the **Enter** key.

When all values have been entered, the Oracle account is created.

Notes:

- Before creating an account, check whether you want to acquire the value of the Explain Plan (EXPLAIN_PLAN) field in the SQL Text (PD_PDSQ) record for operations on the objects that belong to the SYS schema. If you want to do so, use sys as the account to be used by PFM - RM for Oracle. If you use an account other than sys, you will no longer be able to acquire the value of that field. If the value of the EXPLAIN_PLAN field cannot be acquired, message Explain Plan Failed is stored in the field.
- If the account used by PFM - RM for Oracle has no privileges to access, or fails to reference, an object that belongs to a schema of the user who executed SQL, the following value cannot be acquired:

  The value of the Explain Plan (EXPLAIN_PLAN) field in the SQL Text (PD_PDSQ) record

If the value of the EXPLAIN_PLAN field cannot be acquired, message Explain Plan Failed is stored in the field. If you want to acquire the value of the Explain Plan (EXPLAIN_PLAN) field, execute SQL for manipulating the field in the *owner.table-name* format.

- Any Oracle account created using the mk_rmus.sql script is granted UPDATE ANY TABLE or another system privilege that can freely manipulate objects of other schemas. Manage such Oracle accounts with special care.

  The following table lists the privileges granted to Oracle accounts and the assignment limits of tablespaces.

  Table 2–5: Privileges granted by mk_rmus.sql to Oracle accounts and the assignment limits of tablespaces

Type	Privileges granted / assignment limits	Description
System privilege	CREATE SESSION	Required to establish a session with the monitored Oracle Database.
	CREATE TABLE	Required when registering a table needed to monitor the Oracle Database, for the monitored Oracle Database (see the table in *Table 2-11*).
	CREATE PROCEDURE	Required when registering a procedure needed to monitor the Oracle Database, for the monitored Oracle Database (see the package in *Table 2-11*).
	SELECT ANY DICTIONARY	Required when registering information needed to monitor an Oracle Database in the monitored Oracle Database (see *Table 2-11*) and when collecting information.
	SELECT ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	INSERT ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	UPDATE ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	DELETE ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	CREATE ANY INDEX	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	ALTER ANY INDEX	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
Assignment limits of tablespaces	Unlimited assignment for the default tablespace#	Required when registering information needed to monitor an Oracle Database in the monitored Oracle Database (see *Table 2-11*) and when obtaining the Explain Plan field of the PD_PDSQ record.

#

Any created account is granted a privilege to write to the default tablespace without any limit. To change the size of the tablespace allocated to an account after you have created the account, issue the ALTER USER statement in an environment where the sqlplus Oracle command can be executed. Note that any Oracle account with which you execute the ALTER USER statement must be granted the ALTER USER system privilege.

The following shows an example of changing the size of tablespace allocated to an account.

Example:

```
ALTER USER Oracle-account QUOTA maximum-tablespace-allocation-size ON tabl
espace-name;
```

For details about the ALTER USER statement, see your Oracle documentation.

(3) Set up an instance environment

PFM - RM for Oracle requires configurations of the instance environment and the monitoring target. There is a one-to-one match between the configuration of the instance environment and the configuration of the monitoring target.

Note that in PFM - RM for Oracle you can associate one instance environment with only one monitoring target.

You can set up multiple instance environments and monitoring targets by repeating the procedure for each instance.

- Setting up instance information
- Setting monitoring target
- Registering objects in the Oracle Database
- Setting up the Oracle Database
- For example, if you monitor three Oracle instances, repeat these procedures three times.

When you create an environment where there are multiple instances, the number of instances depends on the system configuration. As a guide, use three to five instances for the number of instances. You can increase the number of instances by reducing the number of records to be collected or by lengthening the collection interval. Consider this carefully before operation.

This section describes the procedures for each of the actions.

(a) Set up instance information

You must specify instance information for the Oracle that is to be monitored by the PFM - RM for Oracle. Specify instance information on the PFM - RM host.

The following table lists the instance information items that are to be specified. You should check this information before you start the setup procedure. For details about the Oracle instance information items, see your Oracle documentation.

Table 2–6: PFM - RM for Oracle instance information

Item	Description	Specifiable value	Default
`oracle_sid`	Monitoring-target Oracle system identifier (the same value as the value of the `ORACLE_SID` environment variable)	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	The value specified for the `-inst` option of the `jpcconf inst setup` command
`oracle_home`[#1]	Oracle home folder of Oracle Client used by PFM -RM for Oracle (the same value as the value of the `ORACLE_HOME` environment variable) [#2]	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	--
`oracle_version`[#1]	Version number of Oracle Client used by PFM - RM for Oracle To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, `12` is set.	A two-digit number. • Oracle 11g: 11 • Oracle 12c or later: 12	`11`

Item	Description	Specifiable value	Default
oracle_user[#3]	An account for monitoring Oracle . For details about accounts that can be specified and the required privileges, see *(2) Create an Oracle account to be used in PFM - RM for Oracle*.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	sys
oracle_passwd[#3,#4]	A password for the account that was specified in oracle_user	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	--
net_service_name[#1,#5]	The net service name of a monitoring-target database. For details about the net service name of a monitoring-target database, see your Oracle documentation.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Instance name (the value of oracle_sid)
retry_time	The retry interval for re-establishing connection in the event of an authentication error during establishment of a connection with the Oracle system. If an authentication error occurs after the specified period has passed, the PFM - RM for Oracle service stops. When the value is 0, the PFM - RM for Oracle service stops without retrying to re-establish connection in the event of an authentication error. This item is enabled when startup_always is N. The specification of this item is ignored when startup_always is Y.	0 to 600 (seconds)	0
log_path[#6]	The absolute path name of the folder for storing agent log information	A character string of 245 or fewer bytes that does not include the following characters: • Tabs • The following symbols: / : , ; * ? " < > | Notes: • You can specify the path to a folder under the installation folder only when the default folder is set. • You cannot specify the path to a folder that is used as the output destination of another instance.	*installation-folder*\agt1\agent*instance-name*\log
log_size	The maximum size of one agent log file[#7]	1 to 32 (in megabytes). The recommended value is 16 or greater.	16

Item	Description	Specifiable value	Default
timeout[#8]	The timeout period for Oracle access during a query.	0, or 10 to 3600 (in seconds). When 0 is specified, timeout monitoring is not performed. When a value from 1 to 9 is specified, it is changed to 10 at runtime. For details about timeouts, see *2.6.5 Cancellation facility for Oracle access during record collection*.	0
sql_option[#9]	When Y is specified, information about the following items[#9] is not collected for PI_PIDB and PD_PDTS records, and the value specified by 0 or numeric_10 is set.	{ Y | N }	N
numeric_10[#10]	When sql_option is set to Y, the value specified is set for items for which information is not collected. If sql_option is set to N, this specification is disregarded.	0 to 99999. Note that if the value specified exceeds the maximum value for the data format of the set field (32767 for short and 65535 for ushort), the maximum value for the data format is set.[#11]	0
startup_always	PFM - RM for Oracle may stop due to an Oracle connection error, such as when the monitored Oracle is still starting up when PFM - RM for Oracle starts up. If Y is specified, start processing continues even if a connection error occurs. If N is specified, start processing will stop if an error occurs.	{ Y | N }	Y
localtemp_option[#12]	Option for switching the display of the free space of the locally managed temporary tablespace of PD_PDDB, PI_PIDB, PD_PDDF, PI_PIDF, PD_PDTF, PD_PDTS, and PD_PCTS records. If Y is specified, display the size of the free space. If N is specified, display the size of the unallocated space.	{ Y | N }	N
nls_lang[#13]	Option for specifying the character encoding used for communication between PFM - RM for Oracle and Oracle Database.	Character code set: • In Japanese Windows: {AMERICAN_AMERICA.US7ASCII | AMERICAN_AMERICA.JA16SJISTILDE} • In Simplified-Chinese Windows: {AMERICAN_AMERICA.US7ASCII | AMERICAN_AMERICA.ZHS32GB18030} • Other case: AMERICAN_AMERICA.US7ASCII	AMERICAN_AMERICA.US7ASCII
undospace_option[#14]	Option for switching how the value displayed as the free space in the UNDO tablespace of the PD_PDDB, PI_PIDB,	{ Y | N }	Y

Item	Description	Specifiable value	Default
undospace_option[#14]	PD_PDDF, PI_PIDF, PD_PDTS, and PD_PCTS records is determined. If N is specified, the size of the unallocated space is displayed. If Y is specified, the size of the free space is displayed.	{ Y | N }	Y

Legend:

--: None

#1

The prerequisite product for PFM - RM for Oracle version 10-50 or earlier was Oracle Client 32-bit. The prerequisite product for version 11-00 or later is Oracle Client 64-bit.

The setting method for version 10-50 or earlier cannot be used to connect to an Oracle Database. Therefore, you must set up PFM - RM for Oracle version 11-00 or later on the assumption that Oracle Client 64-bit is used.

Because instance information settings have been changed in version 11-00 or later as shown in the following table, make sure that the information is set up correctly:

Item	PFM - RM for Oracle	
	10-50 or earlier	11-00 or later
oracle_home	Specify the Oracle home folder for Oracle Client 32-bit.	Specify the Oracle home folder for Oracle Client 64-bit.
oracle_version	Specify the version of Oracle Client 32-bit.	Specify the version of Oracle Client 64-bit. To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, 12 is set.
net_service_name	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 32-bit.	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 64-bit.

Notes:

- To upgrade PFM - RM for Oracle 10-50 or earlier to 11-00 or later, instance information is subject to change, and must therefore be updated before starting the PFM - RM for Oracle service.

  Note that Oracle Client 32-bit is no longer needed, and can be uninstalled if it is not used by any product other than PFM - RM for Oracle.

- If you specify ORACLE_HOME for Oracle Client 32-bit and start PFM - RM for Oracle, the KAVL18020-E message appears.

#2

If PFM - RM for Oracle uses the client library of an Oracle Database (when Oracle Database 64-bit is installed on a server with PFM - RM for Oracle installed), specify the Oracle home folder of the Oracle Database.

#3

PFM - RM for Oracle runs using Oracle password authentication.

#4

If the expiration date is set on oracle_passwd, once the password is out of date connections to Oracle fail so that PFM - RM for Oracle cannot collect the performance information. In order to avoid connection errors, perform either of the following procedures before the password is expired:

- Unset the expiration date of the password

- After updating password, execute the `jpcconf inst setup` command to update `oracle_passwd`.

Note that the Oracle default profile is applied to the Oracle account created by `mk_rmus.sql`.

#5

Specify in advance the network service (such as tnsnames.ora) of the Oracle Client used by PFM - RM for Oracle.

Configure the network service definition (such as listener.ora) and run the listener process in advance.

When monitoring Oracle Database instances in an Oracle RAC configuration, set up the PFM - RM for Oracle so that it monitors Oracle Database instances on each node. For details about how to set up, see the Oracle documentation.

Note that the location of tnsnames.ora must be:

`oracle_home\network\admin`

If tnsnames.ora is located on other folder, must therefore set to TNS_ADMIN

environment variable in starting user of PFM - RM for Oracle before

starting the PFM - RM for Oracle service.

For details about the TNS_ADMIN environment variable, see the Oracle

documentation.

If tnsnames.ora is located on other folder, PFM - RM for Oracle cannot connect to Oracle.

#6

The path information before the change is not saved. Manually record this information as history data in a file. Depending on the problem, agent logs from the directory before the change might need to be obtained.

#7

A maximum of 4 agent log files are collected for one instance. Before specifying the `log_size` value, make sure that the value satisfies the following condition (this condition also applies when `log_path` is set to the default):

```
Amount of free space on the drive containing the folder specified in log_p
ath (MB) > log_size x 4
```

If the free disk space is insufficient, agent log cannot be output. For details about the agent log, see *7.3 Log information*.

#8

Set the timeout value according to the time needed to collect records during heavy load (peak time).

#9

To obtain each piece of Oracle segment-related information, PFM - RM for Oracle searches Oracle's static data dictionary views `DBA_SEGMENTS`. If a large number of segments (more than hundreds of thousands) exist for Oracle, information collection requires a significant amount of time. As such, when a large number of segments exist, and the information listed in the following table no longer needs to be collected, set the `sql_option` to `Y` during operation.

Table 2–7: Record names and the values specified for numeric_10 (setting up instance information)

Record name	PFM - View name	Value specified for numeric_10
PD_PDTS	Segments	Enabled
	Extents	Enabled
PI_PIDB	DB Files %	Enabled
	Log Files %	Enabled
	NextAlloc Fails	Enabled

Record name	PFM - View name	Value specified for numeric_10
PI_PIDB	Tablespaces	Enabled
	Rollback Segments	Enabled
	Rollback Segments Trans	Enabled
	Blocks	Enabled
	Segments	Enabled
	Extents	Enabled
	Free Mbytes	Enabled
	Overextended	Enabled
	High Max Extent	Enabled
	Datafiles	Enabled
	Mbytes	Enabled
	Free Extents	Enabled
	Free%	Enabled
	Free Change	Enabled
	Write%	Enabled
	Write/sec	Enabled
	Redo Files	Enabled
	Links	Enabled
	Links Logged On	Enabled
	Links In Tran	Enabled
	Links Open Cursors	Enabled
	Used Change	Enabled
	Used Mbytes	Enabled
	Rollback Segments Hit%	Enabled
	Sort Segments	Enabled
	Sorting Users	Enabled
	Physical Blocks Read	Always set to 0 because it is a delta item.
	Physical Blocks Written	Always set to 0 because it is a delta item.
	Physical Reads	Always set to 0 because it is a delta item.
	Physical Writes	Always set to 0 because it is a delta item.

#10

When displayed in PFM - Web Console, this item indicates whether the values set in each field in #9 are values collected from the Oracle Database, or fixed values.

#11

If the field format for each record is `float` or `double`, since the data is a floating-point number, it may be rounded depending on the specified value.

Example:

When numeric_10 is set to 32767, it may be displayed as 32760.

#12

When localtemp_option is set to Y, collect free space of the locally managed temporary tablespace and information about the extents from v$sort_segment or v$temp_extent_pool of the dynamic performance view. The displayed values of the size of free space are calculated from the size of the used space.

When localtemp_option is set to N, collect free space of the locally managed temporary tablespace and information about the extents from v$temp_space_header of the dynamic performance view. The displayed values of the size of free space are the size of the unallocated space. Since the allocated space is not freed until the temporary tablespace is reconstructed or recreated, the displayed values of free space do not increase until the space is freed.

When issuing query to v$temp_extent_pool view, the Oracle instance goes to sleep. Since this may have effect on the performance of the Oracle instance, you need adequate consideration before localtemp_option is set to Y. For details, see your Oracle documentation.

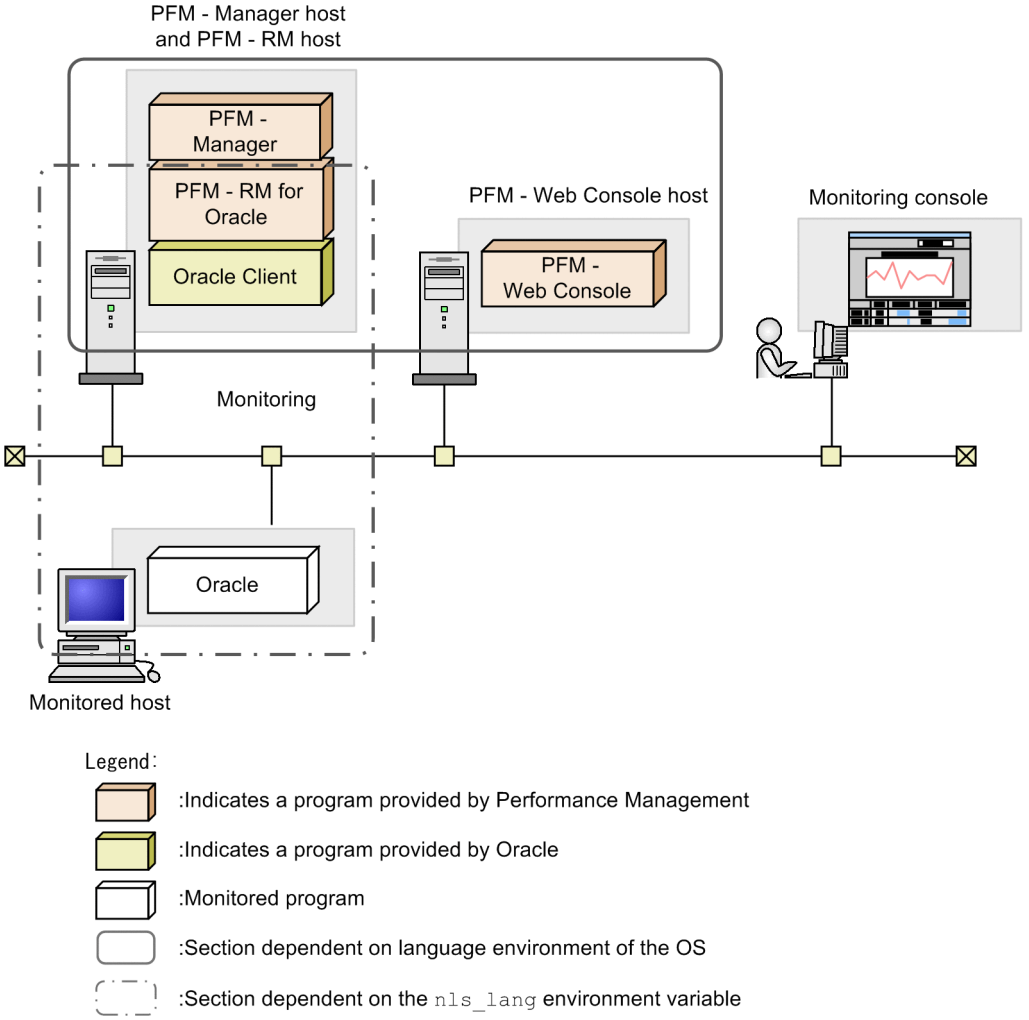
The following records use v$temp_extent_pool view:

- Data File (PD_PDDF)
- Data File Interval (PI_PIDF)

#13

The following figure shows the relationship among data, language environment of the OS, and instance information handled by PFM - RM for Oracle.

Figure 2–5: Relationship between data and the setting values



PFM - RM for Oracle can collect performance data in SJIS (in Japanese Windows) and GB18030 (in Simplified-Chinese Windows) format as well as 7-bit ASCII format. You must specify `nls_lang` variable for the language environment of the OS, `NLS_CHARACTERSET` of the Oracle.

OS language of PFM - RM for Oracle installed	NLS_CHARACTERSET of the monitored Oracle (Database character set)	nls_lang instance information (this item)
Japanese	JA16SJISTILDE	AMERICAN_AMERICA.JA16SJISTILDE or AMERICAN_AMERICA.US7ASCII#
	JA16SJIS	
	other	AMERICAN_AMERICA.US7ASCII#
Simplified-Chinese	ZHS16GBK	AMERICAN_AMERICA.ZHS32GB18030 or AMERICAN_AMERICA.US7ASCII#
	AL32UTF8	
	other	AMERICAN_AMERICA.US7ASCII#
other language	notdependent	AMERICAN_AMERICA.US7ASCII#

#

Performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

For any other combination, performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

When you specify an invalid character code set for the nls_lang instance information, the message KAVL18302-W with errcode 12705 is output, and the connection with Oracle will fail.

In the following cases as well, unreadable characters might occur in the performance data:

1. The Oracle column length is exceeded.

   If you store data that exceeds the Oracle column length, the last character might become unreadable. If you use PFM - RM for Oracle to collect data in Oracle and that data contains unreadable characters, the last character of the performance data will be unreadable.

2. The field size of PFM - RM for Oracle is exceeded.

   PFM - RM for Oracle collects performance data of the record field size from Oracle. Therefore, if Oracle contains data that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name	Filed size (unit: bytes)
Parameter Values(PD_PDP)	Value	512
SQL Text(PD_PDSQ)	Explain Plan	30,000
	SQL Text	30,000

#14

When undospace_option is set to N, the size of the unallocated space is collected as the amount of free space in the UNDO tablespace. Space in the UNDO tablespace that becomes available because its retention period has expired is treated as allocated space until it is released.

When undospace_option is set to Y, the size of the free space is collected as the amount of free space in the UNDO tablespace. Space of the UNDO tablespace that becomes available because its retention period has expired is included in the size of the free space.

The following table shows the fields whose values change depending on the specification of the undospace_option:

Record name	Field name
Data File(PD_PDDF)	Free %
	Free Mbytes
	Used Mbytes
Data File Interval (PI_PIDF)	Free %
	Free Change
	Free Mbytes
	Used Change
	Used Mbytes
Database(PD_PDDB)	Free %
	Free Mbytes
	Used Mbytes
Database Interval (PI_PIDB)	Free %
	Free Change
	Free Mbytes
	Used Change

Record name	Field name
Database Interval (PI_PIDB)	Used Mbytes
Tablespace (PD_PDTS)	Free %
	Free Mbytes
	Used Mbytes
	Max Extend Free %
	Max Extend Free Mbytes
Collection Tablespace 2 (PD_PCTS)	Free Mbytes

Notes:

- The PFM - RM for Oracle services can be started only when an instance environment has been set up.
- When you use the `jpcconf inst setup` command to create an instance environment, the command terminates normally even if an instance name that does not exist in Oracle is specified. However, if you then start record collection, message KAVL18401-W is output to the common message log, and you cannot connect to the monitored Oracle. If this problem occurs, check whether you specified the correct instance name, and re-execute the `jpcconf inst setup` command with the correct instance name specified.
- Do not use multiple PFM - RM for Oracle services to monitor the same Oracle instance. Do not use PFM - RM for Oracle and PFM - Agent for Oracle to monitor the same Oracle instance.
- Do not set Oracle9i as the monitoring target of PFM - RM for Oracle. If so, "KAVL18501-E" is output to the common message log and PFM - RM for Oracle stops.

An instance environment is created by using the `jpcconf inst setup` command. The following procedure shows how to create an instance environment.

To create an instance environment:

1. Execute the `jpcconf inst setup` command with a service key and instance name specified.

   For example, when you want to create the instance environment for the PFM - RM for Oracle instance named `SDC`, use the following command line:

   ```
   jpcconf inst setup -key RMOracle -inst SDC
   ```

   Note that you cannot use `sql` as an instance name.

   For details about the `jpcconf inst setup` command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

2. Set up Oracle instance information for PFM - RM for Oracle.

   Enter the values for the items listed in Table 2-6 as prompted by the command. All items are mandatory. To use the default value displayed for an item, only press the **Enter** key.

When all values have been entered, the instance environment is created. If you want to change the instance information, re-execute the `jpcconf inst setup` command to update the instance environment. For details about updating an instance environment, see *2.6.3 Updating an instance environment*.

The following describes the created instance environment.

- Folder configuration of the instance environment

The instance environment is set up in the following folders:

For a physical host: *installation-folder*\agt1

For a logical host: *environment-folder*[#]\jp1pc\agt1

#

The environment folder is a folder on the shared disk specified when the logical host was created.

The following table describes the folder configuration of the created instance environment.

Table 2–8: Folder configuration of the instance environment

Folder and file			Description
agent	*instance-name*	jpcagt.ini	Remote Monitor Collector service startup initialization file
		jpcagt.ini.model[#]	Model file for the Remote Monitor Collector service startup initialization file
		status.dat	Relay file for internal processing
		tstatuses.dat	Status information file for virtual agent
		targetlist.ini	List file for monitoring target
		grouplist.ini	List file for monitoring group
		GARULES.DAT	List file containing a description of the grouping rules
		targets	Storage folder for remote agent
		groups	Storage folder for group agent
		log	Storage folder for log files
store	*instance-name*	jpcsto.ini	Remote Monitor Store service startup initialization file
		jpcsto.ini.model[#]	Model file for the Remote Monitor Store service startup initialization file
		*.DB	Performance data file
		*.IDX	Index file for performance data file
		*.LCK	Lock file for performance data file
		status.dat	Relay file for internal processing
		*.DAT	Data model definition file
		dump	Export destination folder
		import	Standard database import destination folder
		backup	Backup destination folder
		log	Storage folder for log files
		partial	Standard database partial backup destination folder
		STPD	Performance data storage destination folder for records of the PD record type
		STPI	Performance data storage destination folder for records of the PI record type

#

This file is used to reset all values to the initial values set when the instance environment was created.

- Service ID for the instance environment

  The service for the instance environment has the following format:

  - Remote Monitor Collector service:
  - 1A*instance-number instance-name* [*host-name*]
  - Remote Monitor Store service:
    1S *instance-number instance-name* [*host-name*]
  - Group Agent service:

  1A*instance-number instance-name* [ALL@*host-name*]

  In PFM - RM for Oracle, the instance name specified in the `jpcconf inst setup` command is displayed.

  For example, if you execute the command with host name host1 and instance name SDC, the service names will be as follows:

  - Remote Monitor Collector service:
    1A1SDC [host1]
  - Remote Monitor Store service:
    1S1SDC [host1]
  - Group Agent service:

  1A1SDC [All@host1]

  For details about the service ID, see the naming rules described in Appendix in the *JP1/Performance Management Planning and Configuration Guide*.

- Windows service names in the instance environment

  The Windows service names in the instance environment are as follows:

  - Remote Monitor Collector service:
  - PFM - RM for Oracle *instance-name* [*logical-host-name*]
  - Remote Monitor Store service:
  - PFM - RM Store for Oracle *instance-name* [*logical-host-name*]

  For example, when the logical host name is lhost and the instance name is SDC, the service name will be:

  - Remote Monitor Collector service:
    PFM - RM for Oracle SDC [lhost]
  - Remote Monitor Store service:
  - PFM - RM Store for Oracle SDC [lhost]

  For details about Windows service names, see the naming rules described in Appendix in the *JP1/Performance Management Planning and Configuration Guide*.

  For details about the Windows service names for logical host operation, in the *JP1/Performance Management User's Guide*, see the chapters explaining setup and operation for cluster systems.

(b) Set the monitoring target

When you set the monitoring target, you associate the instance that you specify in *(a) Set up instance information* with the information about the monitoring target host.

Set the monitoring target on PFM - RM host.

You must specify the information shown in the following table. Before you set the monitoring target, check the information in advance.

Table 2–9: Configuration for the monitoring target of PFM - RM for Oracle

Item	Description	Specifiable value	Default Value	Changeable
`Target Host`	Oracle host name for monitoring target. If the Oracle host is a logical host, specify the logical host.	Host names can consist of 1 to 32 alphanumeric characters and hyphen. Note that you cannot specify a (logical) host name beginning with a hyphen. Physical and logical host names must be unique within the system.[#1]	--[#2]	Changeable

Legend:

--: None

#1

You cannot specify "ALL" because "ALL" is a reserved word for group agent.

#2

If you omit the specification, the host name of the PFM - RM host is assumed.

Notes:

- You must set the monitoring target to start PFM - RM for Oracle.

  If PFM - RM for Oracle starts without specifying the monitoring target, it outputs "KAVL18639-E" to the common message log and then stops.
- PFM - RM for Oracle identifies the monitoring target Oracle instance by `oracle_sid` that is set in the instance environment.

  The host name specified as `Target Host` is used only in a health check and is not used to connect to the Oracle instance.

  If invalid host names are set to `Target Host`, the status for collecting performance data may not be consistent with the result of the health check.
- Even if you set an invalid value for `Target Host`, the `jpcconf target setup` command ends successfully.
- If you are running a firewall environment on the host of the monitoring target Oracle instance, set up the firewall environment so that the Oracle client used by PFM - RM for Oracle can successfully connect to the Oracle host. For details about Oracle environment setup, see your Oracle documentation. After Oracle environment setup, make sure that you can execute the Oracle sqlplus command in that environment.

In order to set up the monitoring target environment, execute the `jpcconf target setup` command.

To set up the monitoring target environment:

1. Execute the `jpcconf target setup` command specified with the service key, the instance name, and the monitoring target name.

   ```
   jpcconf target setup -key RMOracle -inst instance-name -target monitoring-target-name
   ```

2. Specify the monitoring target information of PFM - RM for Oracle.

Enter the information shown in *Table 2-9* in accordance with the command's instructions. You must enter all of the information items. To use the displayed default value, press the Enter key.

After you have finished entering the information, the monitoring target environment is set up in *installation-folder* `\agt1`. If you want to change the monitoring target information, re-execute the `jpcconf target setup` command and update the monitoring target environment. For details about updating the monitoring target environment, see *2.6.2 Updating a monitoring target*.

Table 2-10 shows the organization of the monitoring target environment folder:

Table 2–10: Organization of the monitoring target environment folder

Folder name and file name				Description
`agent`	Instance name	`targets`	*Monitoring-target-name*`.ini`	Configuration file for the monitoring target
			Monitoring-target-name`.ini.model`	Model configuration file for the monitoring target

(c) Registering objects in the Oracle Database

To use PFM - RM for Oracle to monitor an Oracle Database, you must register the objects provided by PFM - RM for Oracle in the Oracle Database. The objects are registered by using an SQL script provided by PFM - RM for Oracle. The following procedure shows how to execute the SQL script. Note that the procedure is used only once for each account with which the Oracle Database instance is to be monitored.

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, register objects in the PDBs to be monitored. If you use the `sys` account, execute the `sp_rist.sql` script for each PDB to be monitored. When monitoring the root container (`CDB$ROOT`), do not register objects in it because objects are not used for monitoring.

To execute the SQL script:

1. Set up an environment where the `sqlplus` Oracle command can be executed.

   For details about Oracle environment setup, see your Oracle documentation.

2. Navigate to the following directory, which contains the `sp_rist.sql` file provided by PFM - RM for Oracle:

   installation-folder`\agt1\agent\sql`

3. Execute the `sp_rist.sql` script for the Oracle Database that you want to monitor.

   Connect to the Oracle Database by using the account specified by `oracle_user` in the instance information, and then execute the `sp_rist.sql` script.

   The `sp_inst.sql` script will register with Oracle the objects (procedures for monitoring and tables for operation) PFM - RM for Oracle needs to perform Oracle monitoring.

   Example:

   If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

   `sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-for-the-monitoring-target-database* `@sp_rist.sql`

   If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

   `sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-for-the-monitoring-target-PDB* `@sp_rist.sql`

- The `sqlplus` command is provided by Oracle Corporation.

- Specify the oracle_user value as the Oracle account. The objects are created in the database with the Oracle account used here. You must specify the same Oracle account when setup of the instance environment is canceled.
- When you use a SYS user for the Oracle account, executing the sp_rist.sql script without specifying the AS SYSDBA option may result in an error. If an error occurs, execute the script with the AS SYSDBA option specified.

When the above command is executed, the table and packages shown in the following table are created.

Table 2–11: Table and packages to be created

Table	Package
LSC_14_PLAN_TABLE#	LSC_14_PDAS, LSC_14_73_PDDB, LSC_14_PDDB2, LSC_14_PDI, LSC_14_73_PIDB, LSC_14_PIDB2, LSC_14_PIDB3

#

LSC_14_PLAN_TABLE is only used during collection of the SQL Text (PD_PDSQ) record. Therefore, when you collect the SQL Text (PD_PDSQ) record, make sure that at least 5 megabytes of free space is allocated to the default tablespace.

(d) Setting up the Oracle Database

To use the records provided by PFM - RM for Oracle to collect the performance data items listed in the following table, you must set the TIMED_STATISTICS Oracle Database initialization parameter to TRUE.

Table 2–12: Items that can be collected only when TIMED_STATISTICS=TRUE is set

Record	Field
ASM Disk (PD_PDDK)	Read Time (READ_TIME)
	Write Time (WRITE_TIME)
Data File Interval (PI_PIDF)	Write Time (WRITE_TIME)
Session Detail (PD_PDS)	Avg Wait (AVERAGE_WAIT)
	Avg Wait String (AVERAGE_WAIT_STRING)
	Time Waited (TIME_WAITED)
	Time Waited String (TIME_WAITED_STRING)
Session Statistics Summary (PD_PDS2)	Statement CPU (STATEMENT_CPU)
System Stat Summary (PD)	Session CPU Usage (SESSION_CPU_USAGE)
System Stat Summary Interval (PI)	Session CPU Usage (SESSION_CPU_USAGE)

Notes:

- If you modify the initialization parameters file, you must restart the instance's database.
- A value change you make in the server parameters file may take precedence over a change made to the initialization parameters file.
- Setting the TIMED_STATISTICS initialization parameter to TRUE may have adverse effects on the performance of the Oracle Database. If you plan to use this setting, you should first evaluate the possible effects. For details, see your Oracle documentation.

(4) Specifying network settings Option

You must specify the network settings according to the configuration in which Performance Management is used.

The following are the two network setting items:

- IP addresses

  Set the IP addresses when using Performance Management in a network environment where multiple LANs are connected. You can set multiple IP addresses by defining the host names and IP addresses in the `jpchosts` file. Use the same `jpchosts` file throughout the Performance Management system.

  For details, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

- Port numbers

  Specify the port numbers to be used by Performance Management. To avoid conflicts, use the same port numbers and service names across the Performance Management system.

  For details about setting port numbers, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

(5) Change the size of log files Option

The operational status of Performance Management is output to Performance Management's own log file. This log file is called the common message log. Modify this setting if you want to change the file size.

For details, see the chapter explaining installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

(6) Change the storage location of performance data Option

Perform this setting if you want to change the folders where the database of performance data managed by PFM - RM for Oracle is saved, backed up, or exported.

By default, performance data is saved in the following locations:

- Save destination folder: *installation-folder*`\agt1\store\`*instance-name*`\`
- Backup destination folder: *installation-folder*`\agt1\store\`*instance-name*`\backup\`
- Partial backup destination folder: *installation-folder*`\agt1\store\`*instance-name*`\partial`
- Export destination folder: *installation-folder*`\agt1\store\`*instance-name*`\dump\`
- Import destination folder: *installation-folder*`\agt1\store\`*instance-name*`\import\`

Note:

For the default save destination for logical host operation, replace *installation-folder* with *environment-folder* `\jp1pc`.

For details, see *2.6.1 Changing the storage location of performance data*.

(7) Set the connection-target PFM - Manager of PFM - RM for Oracle

On each host on which a PFM - RM for Oracle program is installed, set the connection-target PFM - Manager program that is to manage the PFM - RM for Oracle. Use the `jpcconf mgrhost define` command to set the connection-target PFM - Manager.

Notes:

- When multiple instances of PFM - RM are installed on a single host, you can specify only one PFM - Manager as their connection target. You cannot have a different instance of PFM - Manager as the connection target for each PFM - RM.
- When PFM - RM for Oracle is installed on the same host as PFM - Manager, the connection-target PFM - Manager will be the PFM - Manager on the local host. You cannot change this.

To set the connection-target PFM - Manager:

1. Stop all Performance Management programs and services.

   Stop all active Performance Management programs and services on the host before beginning setup. For details about how to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

   If any Performance Management programs or services are running when you execute the `jpcconf mgrhost define` command, you will be prompted by a message to stop the programs or services.

2. Execute the `jpcconf mgrhost define` command with the host name of the PFM - Manager host you wish to use specified as the connection target.

   For example, if the PFM - Manager you wish to use as the connection target resides on host `host01`, execute the command as follows:

   ```
   jpcconf mgrhost define -host host01
   ```

(8) Setting up the action log Option

This setting is required to output action logs when alarms occur. The action log stores history information that is output in conjunction with the alarms for thresholds related to system load and other conditions.

For details about how to set up the action log, see *K. Outputting Action Log Information*.

2.2 Installation and setup (UNIX)

This section describes the procedures for installing and setting up PFM - RM for Oracle.

2.2.1 Preparation for installing and setting up PFM - RM for Oracle (UNIX)

Check the following before installing and setting up PFM - RM for Oracle.

(1) OS requirements

PFM - RM for Oracle runs on the following OSs:

- Linux 6 (x64)
- Linux 7
- Oracle Linux 6 (x64)
- Oracle Linux 7

(2) Network environment settings

The following describes the network environment required to run Performance Management.

(a) IP address settings

The PFM - RM host must be set up in a network environment where IP addresses can be resolved from host names. PFM - RM for Oracle will not start in an environment where IP addresses cannot be resolved.

PFM - RM for Oracle can run in an IPv6 environment and dual stack environment in addition to an IPv4 environment. To run PFM - RM for Oracle in an IPv6 environment, the monitored Oracle database must support IPv6 environments.

You can use the real host name as a monitoring host name (a host name used in Performance Management System).

In a Windows system, set up the environment so that an IP address can be resolved from the host name returned by the `hostname` command. In a UNIX system, set up the environment so that an IP address can be resolved from the host name returned by the `uname -n` command.

For details about the configuration of a monitoring host name, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*. Note that IP addresses set in the `jpchosts` file are not used for resolving the IP addresses of monitoring targets.

Use one of the following methods to set the host name and IP address of hosts monitored by Performance Management programs:

- Host information settings file for Performance Management (`jpchosts` file)
- `hosts` file
- DNS (Domain Name System)

Use a real host name or an alias name for the monitoring host name.

- When using a real host name

In a Windows system, set up the environment so that an IP address can be resolved from the host name returned by the `hostname` command.

Note that although Performance Management can operate in a DNS environment, it does not support host names in FQDN (Fully Qualified Domain Name) format. Therefore, specify a monitoring host name with the domain name removed.

- When using an alias name

  Set up the environment so that an IP address can be resolved from the specified alias name.

For details about the structure of a monitoring host name, see the chapter that describes how to change the system configuration in the *JP1/Performance Management Planning and Configuration Guide*.

Notes on setting IP addresses:

- If you intend to use Performance Management within multiple LAN environments, set the IP addresses in the `jpchosts` file. For details, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.
- Performance Management cannot operate on the hosts to which IP addresses are assigned dynamically by DHCP. Make sure that all the hosts on which Performance Management programs are installed are configured with user-specified static IP addresses.

Performance Management supports IPv6 environments as well as IPv4 environments as a network configuration. Therefore, Performance Management can operate even in a network configuration in which both an IPv4 environment and an IPv6 environment are used.

PFM - RM for Oracle can communicate with PFM - Manager via IPv6. Note that this explanation applies only when the OS of a host on which PFM - RM for Oracle and PFM - Manager are installed is Windows or Linux.

For details about the scope of communication in an environment with both IPv4 and IPv6, see *M. About Communication in IPv4 Environments and IPv6 Environments*.

When you want to use IPv6 for communication between PFM - Manager and PFM - RM for Oracle, the settings for using IPv6 must be enabled for both the PFM - Manager host and the PFM - RM host. In addition, before installing PFM - RM for Oracle, you need to enable the use of IPv6 on the PFM - RM host. You have to execute the `jpcconf ipv6 enable` command to enable this setting. If this setting is already enabled, however, you do not need to execute the command. If you want to check whether the use of IPv6 is enabled, execute the `jpcconf ipv6 display` command.

For details about the `jpcconf ipv6 enable` command and `jpcconf ipv6 display` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*. For details about the conditions or occasions for executing the `jpcconf ipv6 enable` command, see the chapter that describes network configuration examples in an environment that includes IPv6 in the *JP1/Performance Management Planning and Configuration Guide.*

When you use IPv6 for communication between a monitored host and PFM - RM for Oracle, specify the name of a monitored host on which name resolution can be performed.

Communication between PFM - RM for Oracle and a monitoring target is performed with an IP address that can be resolved. Also, if an IPv4 environment and an IPv6 environment are both used, and communication between PFM - RM for Oracle and the monitoring target fails with an IP address that can be resolved, the communication is not retried by using another IP address.

For example, if communication fails when IPv4 is used, IPv6 is not used to retry communication. Similarly, if communication fails when IPv6 is used, IPv4 is not used to retry communication. Make sure beforehand that a connection can be established.

(b) Port number settings

The following table shows the default port numbers assigned to the services of Performance Management programs. For other services and programs, available port numbers are automatically assigned each time they are started. If you use Performance Management in a firewall environment, use fixed port numbers. For details about how to set fixed port numbers, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

Table 2–13: Default port numbers for Performance Management program services (in UNIX)

Service description	Service name	Parameter	Port number	Remarks
Service configuration information management facility	Name Server	`jp1pcnsvr`	22285	The port number used by the Name Server service of PFM - Manager. This port is set up on every Performance Management host.
Service status management facility	Status Server	`jp1pcstatsvr`	22350	The port number used by the Status Server service of PFM - Manager and PFM - Base. This port is set up on the hosts on which PFM - Manager and PFM - Base are installed.
Monitoring console communication facility	View Server	`jp1pcvsvr`	22286	The port number used by the View Server service of PFM - Manager. This port is set up on the hosts on which PFM - Manager is installed.
Web service facility	Web Service	--	20358	The port number used by the Web Service service of PFM - Web Console.
Web container facility	Web Console	--	20359 20360	The port number used by the Web Console service of PFM - Web Console.
JP1/SLM linkage facility	JP1/ITSLM	--	20905	The port number set by JP1/SLM.

Legend:

--: None

(3) OS user permission required to install PFM - RM

To install PFM - RM for Oracle, use an account with superuser privileges.

(4) Prerequisite programs

This subsection describes the prerequisite programs required to install PFM - RM for Oracle.

The host on which PFM - RM for Oracle is installed is hereafter called "PFM - RM host".

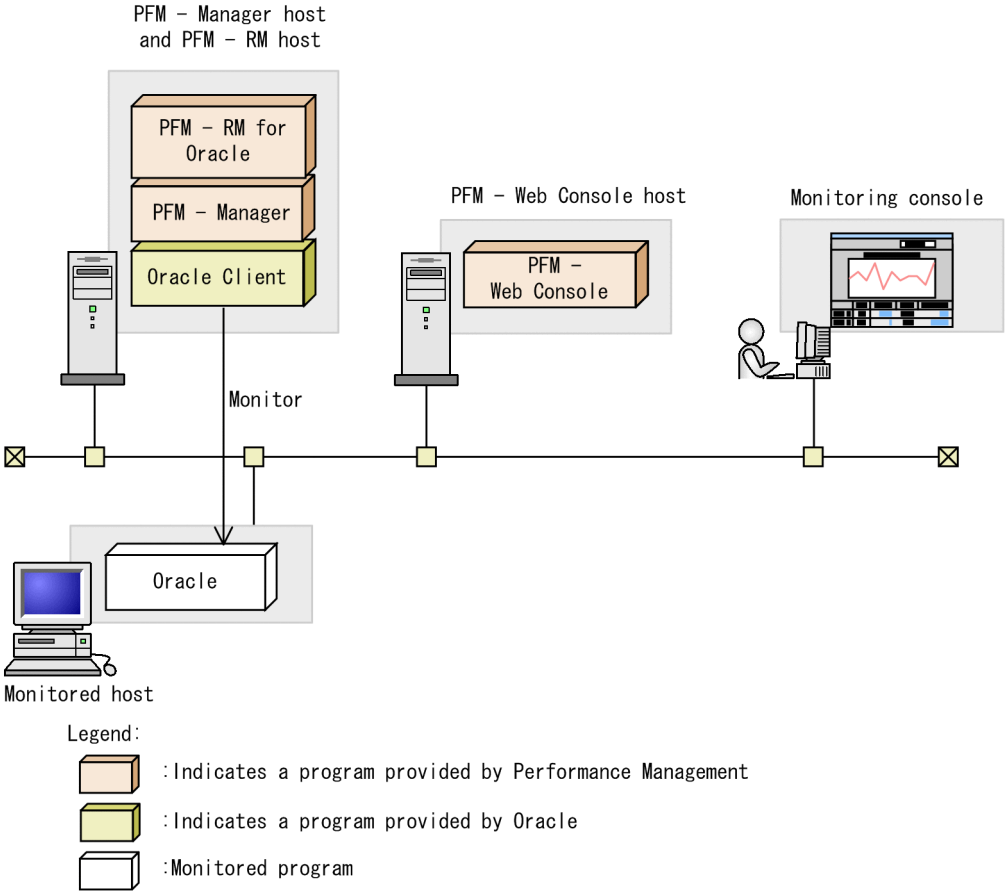
There are roughly two cases in the program configuration of PFM - RM for Oracle. The actual program configuration needs to be determined based on the system configuration.

Install PFM - RM for Oracle on the PFM - Manager host

This configuration is the program configuration for installing PFM - RM for Oracle on the same host on which PFM - Manager is installed. In this program configuration, you need to install Oracle Client on the same host on which PFM - RM for Oracle is installed.

The following figure shows the program configuration in this case:

Figure 2–6: Program configuration (installation of PFM - RM for Oracle on the PFM-Manager host (UNIX))

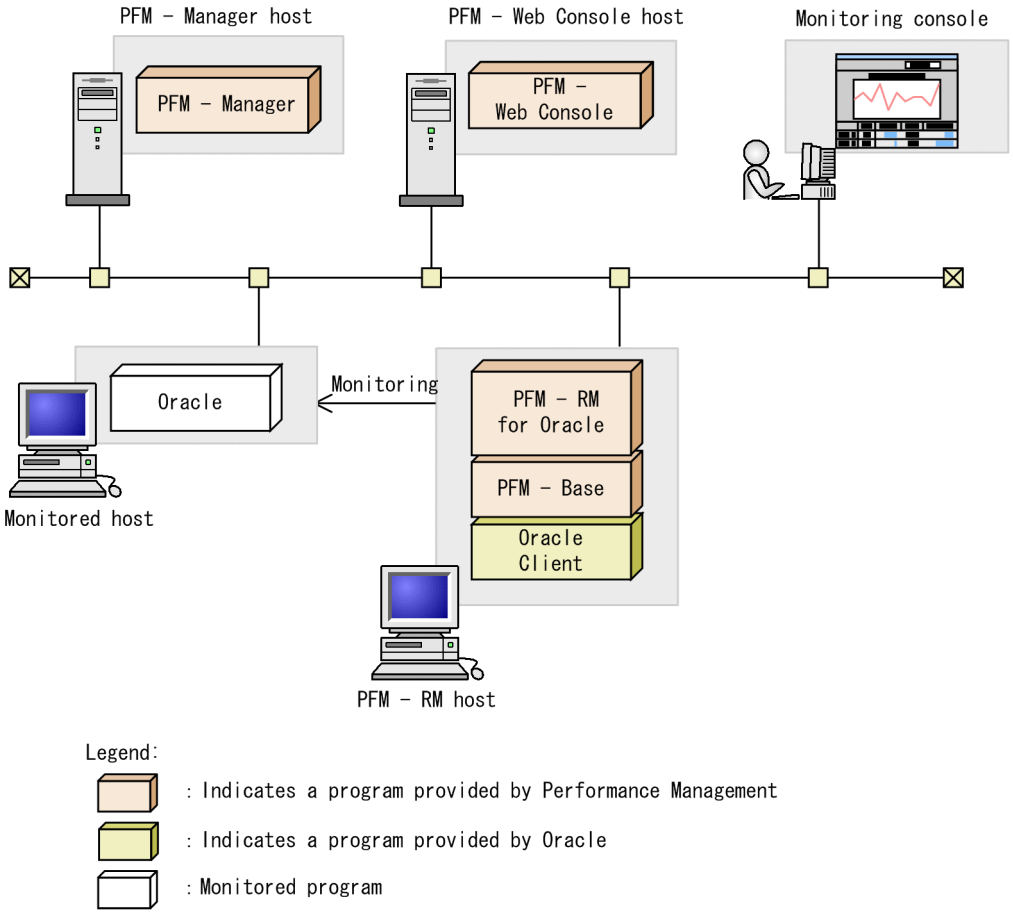


Install PFM - RM for Oracle on the different host from PFM - Manager host

This configuration is the program configuration for installing PFM - RM for Oracle on the different host from PFM - Manager host.

In this program configuration, you need to install PFM - Base and Oracle Client on the same host on which PFM - RM for Oracle is installed. The following figure shows the program configuration in this case:

Figure 2–7: Program configuration (installation of PFM - RM for Oracle on the same host on which PFM - Base and Oracle Client are installed (UNIX))



(a) Monitoring target programs

The monitoring target programs of PFM - RM for Oracle are as follows:

- Oracle Database Standard Edition
- Oracle Database Standard Edition One
- Oracle Database Standard Edition 2
- Oracle Database Enterprise Edition

Note that when a monitoring target program running on a virtualized OS is being monitored, only the functionality of the monitoring target programs guaranteed on the virtualized OS is monitored for the monitoring target program.

(b) Performance Management programs

Install PFM - RM for Oracle and PFM - Base on the PFM - RM host.

PFM - Base is a prerequisite program for PFM - RM for Oracle. Only one instance of PFM - Base is required, even when multiple instances of PFM - RM are installed on one host.

Note that you do not need to install PFM - Base if PFM - Manager and PFM - RM for Oracle are installed on the same host.

To monitor Oracle operation using PFM - RM for Oracle, PFM - Manager and PFM - Web Console are required.

(5) Installation and setup in a cluster system

When you install and set up PFM - RM in a cluster system, the prerequisite network environment and program configuration is different from those for a normal system. There are also additional tasks that must be performed on the executing nodes and standby nodes. For details, see *3. Operating PFM - RM for Oracle in a Cluster System*.

(6) Preparation for acquiring materials when a failure occurs

When a failure occurs, you might need to use the core dump files to investigate the cause. Whether the core dump files are output depends on the user environment settings, so confirm in advance that the settings are as follows:

Settings for the size of the core dump files

The maximum size of the core dump files is limited by the size setting (`ulimit -c`) for the root user's core dump files. Set the scripts as the follows:

```
ulimit -c unlimited
```

If this setting violates the security policies of your computer, state this script setting in a comment line as follows:

```
# ulimit -c unlimited
```

Important

After the above is stated in a comment line, core dump files might not be output when they should be output, such as when a segment fault or bus error occurs in a process. If this is the case, investigation might be impossible.

Settings for the core dump-related kernel parameter (for Linux only)

If you used the Linux kernel parameter (`kernel.core_pattern`) to change the default output destination and names of core dump files, the core dump files might not be able to be acquired. Therefore, we recommend that you do not change the settings for the Linux kernel parameter (`kernel.core_pattern`).

(7) Cautionary notes

Note the following when installing and setting up PFM - RM.

(a) Precautions regarding environment variables

Because Performance Management uses `JPC_HOSTNAME` as an environment variable, do not set it as a user-specific environment variable, as this will prevent Performance Management from operating properly.

(b) Notes on installing and setting up multiple Performance Management programs on same host

With Performance Management, you can install PFM - Manager, PFM - Web Console, and PFM - RM for Oracle on the same host. When doing so, note the following:

- When PFM - Manager and PFM - RM for Oracle are installed on the same host, PFM - Base is not required. In this case, PFM - Manager is a prerequisite program for PFM - RM for Oracle and must be installed before PFM - RM for Oracle is installed.
- You cannot install PFM - Base and PFM - Manager on the same host. If you want to install PFM - Manager on a host on which PFM - Base and PFM - RM for Oracle are already installed, uninstall all Performance Management

programs, and then install PFM - Manager and PFM - RM for Oracle in that order. The same applies when you install PFM - Base on a host on which PFM - Manager and PFM - RM for Oracle are already installed: you must uninstall all Performance Management programs, and then install PFM - Base and PFM - RM for Oracle in that order.

- If you install PFM - RM for Oracle on a host on which PFM - Manager is already installed, the connection-target PFM - Manager will be the instance of PFM - Manager on the local host, and cannot change it to that on the remote host. If you want PFM - RM for Oracle to connect to PFM - Manager on a remote host, ensure that PFM - Manager is not installed on the host on which you install PFM - RM for Oracle.
- If you install PFM - Manager on a host on which PFM - RM for Oracle is already installed, the connection-target PFM - Manager is reset to the local host. See the setting results that are output to the common message log.
- If you install PFM - RM for Oracle on a host on which PFM - Web Console is already installed, close all the browser windows before you install the program.
- When you perform a new installation of a Performance Management program, the status management facility will be enabled by default. To change the setting of the status management facility, see the chapter on error detection for Performance Management in the *JP1/Performance Management User's Guide*.

Hint:

To improve system performance and reliability, we recommend running PFM - Manager, PFM - Web Console, and PFM - RM for Oracle on separate hosts.

(c) Notes on upgrading PFM - RM for Oracle

Before you perform version upgrade installation, you need to perform the procedure described in *2.4.2(1) (c) Deleting the objects registered in the Oracle Database*. Complete version upgrade installation and then perform the procedure in *2.2.4(4) (c) Registering objects in the Oracle Database*.

For details about notes on upgrading the versions of Performance Management programs, see the section describing the notes on version upgrading in the chapter that explains installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

For details about notes on upgrading the version of PFM - RM for Oracle, see *H. Migration Procedure and Notes on Migration*.

For details about upgrading, see the *JP1/Performance Management Planning and Configuration Guide*.

(d) Other cautionary notes

- To use PFM - RM for Oracle to monitor an Oracle Database, you must install and set up Oracle Client 64-bit to connect to the Oracle Database.

  Note that you can select *Administrator* or *Runtime* as the installation type for Oracle Client 64-bit. Instant Client is not supported.

  When you mistook to install Oracle Client by using Instant Client as the installation type, do not install it by using [Administrator] or [Runtime] to the same ORACLE_HOME. In this case, install Oracle Client to the other ORACLE_HOME or install it after deleting Instant Client.
- If the monitoring-target program is Oracle Database 12c Release 1, the program can only be monitored in a non-CDB environment and cannot be monitored in a CDB environment.
- If the monitoring-target program is Oracle Database 12c Release 2 or later, in addition to the program in a traditional non-CDB environment, PDBs and the root container (`CDB$ROOT`) in a CDB environment can be monitored. Monitoring application containers (an application root and application PDBs) is not supported.
- When you perform a new installation of PFM - RM for Oracle in an environment where no other Performance Management program has been installed, make sure that there are no files or folders in the installation folder.

- If installation fails and `Install failed` is displayed on the installation status bar as a result, acquire the `/etc/.hitachi/.hitachi.log` file. Note that this log file is overwritten every time installation is performed. If you want to keep its contents, you will have to back it up. For the default file name for the installation log file, see *7.4.2(2) Information about Performance Management*.
- If you install Performance Management programs in a directory linked to another directory, some files and directories may remain when the programs are uninstalled. If files and directories remain, delete them manually. When Performance Management programs are installed in the link-target directory, any existing files and directories whose names are the same as the names of the files and directories being installed will be overwritten.
- If the `/opt/jp1pc/setup` directory contains the setup file for PFM - RM for Oracle, additional setup for a new instance of PFM - RM for Oracle is performed. When additional setup of PFM - RM for Oracle is successful, message KAVE05908-I `New agent setup (`*pfm-agent-service-key*`) ended successfully` is output to the common message log. Check whether this message has been output.
- When you install Performance Management programs, check whether the following security-related programs are installed. If they have been installed, take appropriate action according to the following explanation.
  - Security monitoring program

    Stop the security monitoring program or change the settings so that the installation of Performance Management programs will not be interrupted.
  - Virus detection program

    Stop the virus detection program before you install Performance Management programs.

    If a virus detection program is running during the installation of Performance Management programs, the installation processing might slow down, installation might not be executable, or the programs might not be able to be installed correctly.
  - Process monitoring program

    Stop the process monitoring program or change the settings. Also, specify settings that prevent the services or processes of Performance Management and common components from being monitored.

    If the process monitoring program starts or stops these services or processes during the installation of Performance Management programs, installation might fail.
- This software is a Hitachi program product that conforms to the disk copy installation of JP1/ServerConductor/Deployment Manager and Hitachi Compute Systems Manager Deployment Manager Plug-in, or the copy functionality using conversion to image files that is provided by a virtual platform. About the disk copy installation, see notes on installing replicated disks in the manual *JP1/Performance Management Planning and Configuration Guide*.

2.2.2 Installation and setup workflow (UNIX)

The following figure shows the workflow for installing and setting up PFM - RM for Oracle.

Figure 2–8: Installation and setup workflow (UNIX)

For details about the installation and setup procedures for PFM - Manager and PFM - Web Console, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

2.2.3 Installation procedure (UNIX)

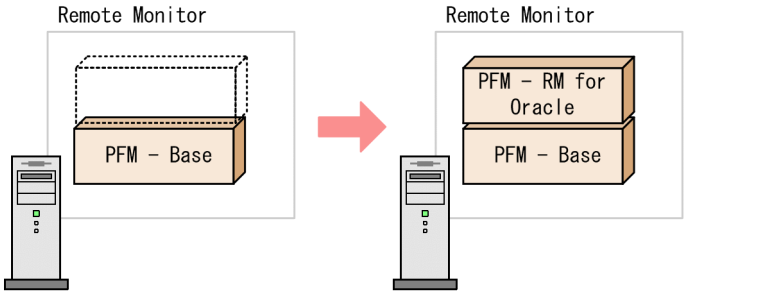
This subsection explains the order in which the component programs of PFM - RM for Oracle are to be installed, and describes how to install these programs from the supplied medium.

(1) Order of installation

Install PFM - Base, and then PFM - RM for Oracle. PFM - Base must be installed on the host before you can install PFM - RM for Oracle.

If you want to install PFM - RM for Oracle and PFM - Manager on the same host, install PFM - Manager before you install PFM - RM for Oracle.

Multiple instances of PFM - RM on the same host can be installed in any order.



(2) How to install the programs

You can install Performance Management programs on a UNIX host either by using the supplied medium, or by using JP1/Software Distribution to perform a remote installation. For details about how to use JP1/Software Distribution, see the applicable one of the following manuals:

- *Job Management Partner 1/Software Distribution Manager Description and Administrator's Guide*
- *Job Management Partner 1/Software Distribution SubManager Description and Administrator's Guide*, for UNIX systems
- *Job Management Partner 1/Software Distribution Client Description and User's Guide*, for UNIX systems

To install programs from the supplied medium:

1. Make sure that the installation directory for Performance Management programs (`/opt/jp1pc/*`) actually exists.
2. As the superuser, log on to the host on which Performance Management programs are to be installed, or use the `su` command to change the user to superuser.
3. If any Performance Management services are running on the local host, stop all of them.
   The services you are going to stop are the Performance Management services running on both the physical and logical hosts. For details about how to stop services, see the chapter that explains startup and termination of Performance Management in the *JP1/Performance Management User's Guide*.
4. Insert the supplied medium into the machine.
5. Execute the `mount` command to mount the supplied medium.
   The following is an example of the command executed to mount the supplied medium on the mount directory:

   ```
   /bin/mount -r -o mode=0544 device-special-file mount-directory
   ```

6. Execute the following command to start Hitachi PP Installer:#

```
mount-directory/X64LIN/SETUP mount-directory
```

Hitachi PP Installer starts and the initial window appears.

7. Enter `I` in the initial window.
   A list of programs that can be installed appears.
8. Select the Performance Management programs you wish to install, and enter `I`.
   The selected programs are installed. Note that you can move the cursor and use the space bar to select programs.
9. After installation is correctly finished, enter `Q`.
   The initial window of Hitachi PP Installer reappears.

2.2.4 Setting up PFM - RM for Oracle (UNIX)

This subsection describes how to set up PFM - RM for Oracle for operation.

Option indicates an item that may or may not be required depending on your operating environment, or an optional item that you can set if you do not wish to use the default.

(1) Set the LANG environment variable

The following table lists the `LANG` environment variable values supported by PFM - RM for Oracle. If you set a language other than the ones indicated in the table below (such as German, French, Spanish, Korean, or Russian), `C` is assumed as the value of the `LANG` environment variable.

Before you specify the `LANG` environment variable, make sure that the language environment you want to set has been installed and set up correctly. If you fail to check, characters may not be displayed correctly or definition data may be overwritten.

Table 2–14: LANG environment variables that can be used in PFM - RM for Oracle

OS	Language and code	LANG value
Linux#	English	`C`
	Japanese (Shift-JIS)	nothing
	Japanese (EUC)	nothing
	Japanese (UTF-8)	• `ja_JP.UTF-8` • `ja_JP.utf8`
	Chinese (GB18030)	`zh_CN.gb18030`
	Chinese (UTF-8)	• `zh_CN.UTF-8` • `zh_CN.utf8`

#
The ASCII 7-bit character set is supported, except for the following language types:
- Japanese
- English
- Simplified-Chinese

(2) Register PFM - RM for Oracle Option

To perform integrated management of PFM - RM for Oracle using PFM - Manager and PFM - Web Console, you must register PFM - RM for Oracle with PFM - Manager and PFM - Web Console.

If PFM - RM for Oracle is already registered in PFM - Manager and PFM - Web Console, you do not have to follow the procedure described below. If PFM - RM for Oracle is not registered yet, manually register PFM - RM for Oracle according to the procedure.

You can determine whether manual registration of PFM - RM for Oracle is necessary by referring to the conditions described below.

Manually registering PFM - RM for Oracle in PFM - Manager

When all of the following conditions apply, manually register PFM - RM for Oracle in PFM - Manager:

- The PFM - RM for Oracle to be installed is of a product version that is not specified in the *Release Notes* for PFM - Manager.
- PFM - RM for Oracle is installed on a host other than PFM - Manager.

Manually registering PFM - RM for Oracle in PFM - Web Console

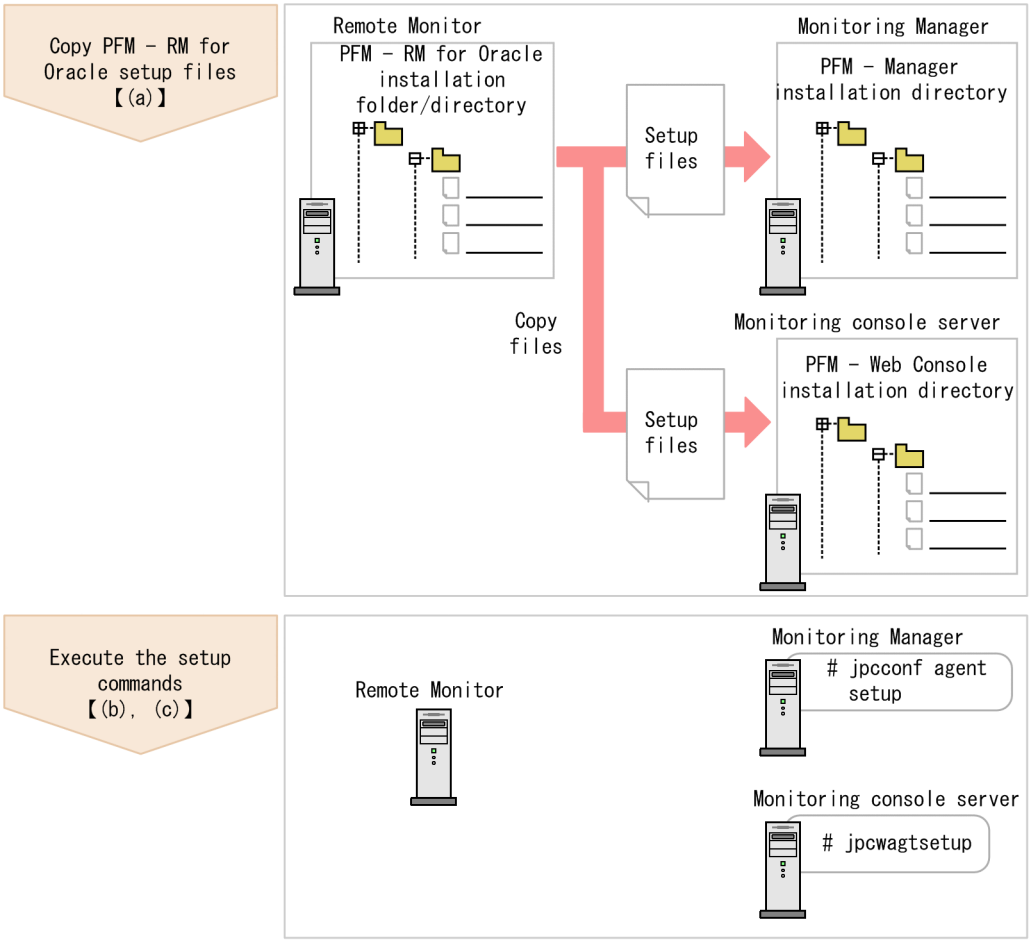
When the following condition applies, manually register PFM - RM for Oracle in PFM - Web Console:

- The PFM - RM for Oracle to be installed is of a product version that is not specified in the *Release Notes* for PFM - Web Console.

If, however, the *Release Notes* for PFM - RM for Oracle state that it is necessary to execute the setup command, execute the setup command.

The following figure shows the flow of PFM - RM for Oracle registration.

Figure 2–9: Flow of PFM - RM for Oracle registration



Legend:

【 】 : Text reference

Notes:

- Register PFM - RM for Oracle before setting up an instance environment.
- You do not need to register a new instance of an already registered version of PFM - RM for Oracle when you add it to the Performance Management system.
- When you have installed different versions of PFM - RM for Oracle on different hosts, set up the older version before the newer version.
- When you install PFM - RM for Oracle on the same host as PFM - Manager, the `jpcconf agent setup` command is executed automatically, and the following message is output to the common message log: KAVE05908-I `New agent setup (`*pfm-agent-service-key*`) ended successfully. (version=`*version*`)`. Check the result of command execution in the log file. If execution was unsuccessful, try it again. For details about how to execute commands, see the chapter on commands in the manual *JP1/Performance Management Reference*.
- Registration of PFM - RM for Oracle creates the **RM Oracle** folder in **Reports** window and **Alarms** window of PFM - Web Console. If the **RM Oracle** file or folder already exists on the **Reports** window, rename the file or folder before registering PFM - RM for Oracle.

(a) Copy the PFM - RM for Oracle setup files

Copy the setup files from the host on which you installed PFM - RM for Oracle to the hosts on which PFM - Manager and PFM - Web Console are installed.

To copy the files:

1. If PFM - Web Console is running, stop it before copying the files.
2. Copy the PFM - RM for Oracle setup files in binary mode.
   The following table shows the location of the setup files and where they should be copied.

   Table 2–15: Setup files to be copied (UNIX)

PFM - RM for Oracle setup file	Destination		
	PFM program name	OS	Destination folder
/opt/jp1pc/setup/jpcagt1w.EXE	PFM - Manager	Windows	*installation-folder*\setup
/opt/jp1pc/setup/jpcagt1u.Z		UNIX	/opt/jp1pc/setup/
/opt/jp1pc/setup/jpcagt1w.EXE	PFM - Web Console	Windows	*installation-folder*\setup
/opt/jp1pc/setup/jpcagt1u.Z		UNIX	/opt/jp1pcwebcon/setup/

(b) Execute the setup command on the PFM - Manager host

On the PFM - Manager host, execute the following command to set up PFM - RM for Oracle:

```
jpcconf agent setup -key RMOracle
```

Notes on executing the command:

If any Performance Management programs or services are still running on the local host when you execute the `jpcconf agent setup` command, an error may occur. If an error occurs, make sure that all Performance Management programs and services have completely stopped, and then execute the `jpcconf agent setup` command again.

You can then delete the PFM - RM for Oracle setup files remaining on the PFM - Manager host.

(c) Execute the setup command on the PFM - Web Console host

On the PFM - Web Console host, execute the following command to set up PFM - RM for Oracle:

```
jpcwagtsetup
```

You can then delete the PFM - RM setup files remaining on the PFM - Web Console host.

(3) Create an Oracle account to be used in PFM - RM for Oracle

To monitor an Oracle Database and collect performance data by using PFM - RM for Oracle, you must perform either of the following setting tasks:

- Set the `sys` account as the account used to monitor the Oracle Database from PFM - RM for Oracle
- Create a special Oracle account with system privileges, and set it as the account used to monitor the Oracle Database from PFM - RM for Oracle

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, PDBs and the root container (`CDB$ROOT`) can be monitored. When you create Oracle accounts to monitor PDBs and the root container in a CDB configuration, create the following users:

- If you create a user for monitoring the root container (CDB$ROOT)

  A common user with system privileges for CDB$ROOT listed in *Table 2-16*
- If you create a user for monitoring PDBs

  A local user with system privileges for the PDBs to be monitored listed in *Table 2-16*

  When the root container (CDB$ROOT) that is being monitored, collecting performance data is different by monitored account. For details, see *5. List of records for PFM - RM for Oracle* or descriptions of each record field.

  This is difference of setting for collecting PDB's performance data. For details, see your Oracle documentation.

If you create Oracle accounts by executing the mk_rmus.sql script, the following users can be created:

- If the monitoring target is Oracle Database 11g Release 2 or earlier, or Oracle Database 12c Release 1 or later in a non-CDB configuration

  A user with system privileges listed in *Table 2-16*
- If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration
  - A common user with system privileges for CDB$ROOT listed in *Table 2-16*
  - A local user with system privileges for the PDBs to be monitored listed in *Table 2-16*

The following table lists the operations that PFM - RM for Oracle performs for the Oracle Database to collect performance data. The table also lists the system privileges required to perform the operations with the Oracle account.

Table 2–16: Operations for the Oracle Database and required system privileges

Operations that PFM - RM for Oracle performs for the Oracle Database	System privileges required to perform the operations
• Searching the static data dictionary view • Searching the dynamic performance view • Executing the listener control utility • Acquiring the execution schedule of the selected SQL • Executing a stored package specific to PFM - RM for Oracle	• CREATE SESSION • CREATE TABLE • CREATE PROCEDURE • SELECT ANY DICTIONARY • SELECT ANY TABLE • INSERT ANY TABLE • DELETE ANY TABLE • UPDATE ANY TABLE • CREATE ANY INDEX • ALTER ANY INDEX • UNLIMITED TABLESPACE (This privilege is not needed when an assignment limit that allows writing to the default tablespace of the account used for monitoring has been set.)

The sys account has the system privileges shown in Table 2-16. When the sys account cannot be used for Oracle Database monitoring due to security requirements, use an Oracle account with the system privileges shown in Table 2-16.

To use an Oracle account that can use PFM - RM for Oracle without use of the mk_rmus.sql script, grant the privileges necessary for operations. By granting these privileges, the minimum necessary privileges can be granted to the Oracle account. When granting privileges according to role, do so explicitly (using GRANT *privileges*...). For details about the privileges needed for each operation, see *I. Precautions Regarding Permissions*.

The following table lists the information needed to create an Oracle account by executing the mk_rmus.sql script. Check the information before starting setup operations.

Table 2–17: Information required to create an Oracle account

Item	Description
Enter username	Specifies the name of the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the user parameter of the CREATE USER statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. The default is RMAGT1. Note: If you specify an existing account in the database as an account to be used by an instance of PFM - RM for Oracle, a script error occurs. Always check the account names existing in the database in advance, and specify an account that will be used only for the instance of PFM - RM for Oracle.
Enter password	Specifies the password for the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the BY password parameter of the IDENTIFIED clause in the CREATE USER statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. This is a mandatory item.
Enter default tablespace	Specifies the default tablespace used by the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the DEFAULT TABLESPACE clause in the CREATE USER statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. This is a mandatory item. Note: Do not specify the SYSTEM or INDEX tablespace as the default tablespace. Before specifying the default tablespace, make sure that no problem occurs when a package for PFM - RM for Oracle is registered in the tablespace. Alternatively, create an exclusive tablespace for PFM - RM for Oracle, and then specify the tablespace as the default tablespace.
Enter default temporary tablespace	Specifies the default temporary tablespace used by the account to be created. The value you specify must consist of 7-bit ASCII alphanumeric characters, must not exceed 30 bytes, and must be specifiable in the TEMPORARY TABLESPACE clause in the CREATE USER statement. Note that a character string that begins with a number and includes an alphabetic character cannot be specified. This is a mandatory item. Note: Do not specify the SYSTEM, INDEX, or USERS tablespace as the default temporary tablespace. Before specifying the default temporary tablespace, make sure that no problem will occur if the tablespace is used as the default temporary tablespace. Alternatively, create an exclusive tablespace for PFM - RM for Oracle, and then specify the tablespace as the default temporary tablespace.

Notes:

- Make sure that the value of each item consists of only 7-bit ASCII alphanumeric characters that do not exceed 30 bytes. If the value is longer than 30 bytes or includes a character that is not a 7-bit ASCII alphanumeric character, the script may operate incorrectly.
- Make sure that the value of each parameter is a nonquoted identifier described in the Schema Object Naming Rules. If you specify a value that is not a nonquoted identifier, the script may operate incorrectly. For details about the Schema Object Naming Rules and nonquoted identifiers, see your Oracle documentation.
- If you create a common user, by executing the mk_rmus.sql script, for monitoring the root container (CDB $ROOT) of Oracle Database 12c Release 2 or later in a CDB configuration, the default tablespace and default temporary tablespace that are specified in the mk_rmus.sql script must be included in all containers that

belong to the CDB. For that reason, before executing the mk_rmus.sql script, create the default tablespace and default temporary tablespace in all containers that belong to the CDB. If the mk_rmus.sql script is executed without satisfying the requirements for creating a common user, the creation might fail and the KAVL18506-E message might appear. For details about the requirements for creating a common user, see the Oracle Database documentation.

- If you want to check the details of an account created by mk_rmus.sql, see DBA_USERS, which is a static dictionary view for the monitoring-target Oracle Database.

  The following example shows how to view the tablespace for the account R4O in the static data dictionary view DBA_USERS. If it is clear from the execution results of this SQL statement that the account has been created in the wrong tablespace, delete the account, and then re-create it using mk_rmus.sql.

Example:

To check the details of Oracle account R40 in UNIX:

1. From the command prompt, use the sys account to connect to SQL*Plus.

   sqlplus "sys *account*/sys *account-password*@*net-service-name-for-the-monitoring-target-database* AS SYSDBA"

2. Use SQL*Plus to execute the following SQL statement:

   ```
   SQL>select DEFAULT_TABLESPACE, TEMPORARY_TABLESPACE from DBA_USERS
   where USERNAME='R4O';
   ```

3. Check the execution results. For example, you can check the default tablespace from the DEFAULT_TABLESPACE column and the default temporary tablespace from the TEMPORARY_TABLESPACE column.

Note:

The method for connecting to SQL*Plus with the sys account may differ according to the Oracle version. For details, see the Oracle documentation.

Use SYSDBA privileges to connect to the Oracle Database that you want to monitor.

For details about the CREATE USER statement, see your Oracle documentation.

The following procedure shows how to create an Oracle account. Before creating an Oracle account, make sure that the tablespaces and other required resources have been prepared.

To create an Oracle account:

1. Set up an environment where the sqlplus Oracle command can be executed.

   For details about Oracle environment setup, see your Oracle documentation.

2. Navigate to the following folder, which contains mk_rmus.sql provided by PFM - RM for Oracle:

   ```
   /opt/jp1pc/agt1/agent/sql
   ```

3. Execute the mk_rmus.sql script for the monitoring-target Oracle Database.

   Example:

   If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

   sqlplus *Oracle-account*/*password-for-the-Oracle-account*@*net-service-name-for-the-monitoring-target-database* @mk_rmus.sql

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

- If you create a local user for a PDB

`sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-for-the-monitoring-target-PDB* `@mk_rmus.sql`

- If you create a common user for the root container (`CDB$ROOT`)

`sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-for-the-monitoring-target-CDB$ROOT* `@mk_rmus.sql`

Notes:

- The `sqlplus` command is provided by Oracle Corporation.
- The Oracle account with which the `mk_rmus.sql` script is executed must be granted the `CREATE USER`, `CREATE SESSION` and `GRANT ANY PRIVILEGE` system privileges before the script is executed.
- If the `SYS` account is used to execute `mk_rmus.sql` script, an error may occur unless the `AS SYSDBA` option is specified.
- Establish either a `SYSDBA` connection to the monitoring-target Oracle Database.

  The following shows an example of the `mk_rmus.sql` script:

  Example:

  If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

  `sqlplus "`*sys*`/`*password-for-the-sys*`@`*net-service-name-for-the-monitoring-target-database* `AS SYSDBA" @mk_rmus.sql`

  If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

  - If you create a local user for a PDB

  `sqlplus "`*sys*`/`*password-for-the-sys*`@`*net-service-name-for-the-monitoring-target-PDB* `AS SYSDBA" @mk_rmus.sql`

  - If you create a common user for the root container (`CDB$ROOT`)

  `sqlplus "`*sys*`/`*password-for-the-sys*`@`*net-service-name-for-the-monitoring-target-CDB$ROOT* `AS SYSDBA" @mk_rmus.sql`
- When the `mk_rmus.sql` script is executed, the execution results are output to a spool file. Note that the spool file cannot be created in the following cases:

  • The current directory has not been changed to the folder shown in step 2 when the `mk_rmus.sql` script is executed.

  • A user without root privileges uses SQL*Plus to execute the `mk_rmus.sql` script.

4. Set the parameters that are required to create an Oracle account.

   Enter the values for the items listed in *Table 2-17* as prompted by the command. All items are mandatory. To use the default value displayed for an item, only press the **Enter** key.

When all values have been entered, the Oracle account is created.

Notes:

- Before creating an account, check whether you want to acquire the value of the Explain Plan (`EXPLAIN_PLAN`) field in the SQL Text (`PD_PDSQ`) record for operations on the objects that belong to the `SYS` schema. If you want to do so, use `sys` as the account to be used by PFM - RM for Oracle. If you use an account other than `sys`, you will no longer be able to acquire the value of that field. If the value of the `EXPLAIN_PLAN` field cannot be acquired, message `Explain Plan Failed` is stored in the field.

- If the account used by PFM - RM for Oracle has no privileges to access, or fails to reference, an object that belongs to a schema of the user who executed SQL, the following value cannot be acquired:

  The value of the Explain Plan (EXPLAIN_PLAN) field in the SQL Text (PD_PDSQ) record

  If the value of the EXPLAIN_PLAN field cannot be acquired, message Explain Plan Failed is stored in the field. If you want to acquire the value of the Explain Plan (EXPLAIN_PLAN) field, execute the SQL for manipulating the field in the *owner.table-name* format.

- Any Oracle account created using the mk_rmus.sql script is granted UPDATE ANY TABLE or another system privilege that can freely manipulate objects of other schemas. Manage such Oracle accounts with special care.

  The following table lists the privileges granted to Oracle accounts and the assignment limits of tablespaces.

Table 2–18: Privileges granted by mk_rmus.sql to Oracle accounts and the assignment limits of tablespaces

Type	Privileges granted / assignment limits	Description
System privilege	CREATE SESSION	Required to establish a session with the monitored Oracle Database.
	CREATE TABLE	Required when registering a table needed to monitor the Oracle Database, for the monitored Oracle Database (see the table in Table 2-24).
	CREATE PROCEDURE	Required when registering a procedure needed to monitor the Oracle Database, for the monitored Oracle Database (see the package in Table 2-24).
	SELECT ANY DICTIONARY	Required when registering information needed to monitor the Oracle Database in the monitored Oracle Database (see *Table 2-24*) and when collecting information.
	SELECT ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	INSERT ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	UPDATE ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	DELETE ANY TABLE	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	CREATE ANY INDEX	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
	ALTER ANY INDEX	Required to obtain the Explain Plan (EXPLAIN_PLAN) field in a SQL Text (PD_PDSQ) record.
Assignment limits of tablespaces	Unlimited assignment for the default tablespace#	Required when registering information needed to monitor the Oracle Database in the monitored Oracle Database (see *Table 2-24*) and when obtaining the Explain Plan field of the PD_PDSQ record.

#

Any created account is granted a privilege to write to the default tablespace without any limit. To change the size of the tablespace allocated to an account after you have created the account, issue the ALTER USER statement in an environment where the sqlplus Oracle command can be executed. Note that any Oracle account with which you execute the ALTER USER statement must be granted the ALTER USER system privilege.

The following shows an example of changing the size of tablespace allocated to an account.

Example:

```
ALTER USER Oracle-account QUOTA maximum-tablespace-allocation-size ON t
ablespace-name;
```

For details about the `ALTER USER` statement, see your Oracle documentation.

(4) Set up an instance environment

PFM - RM for Oracle requires configurations of the instance environment and the monitoring target. There is a one-to-one match between the configuration of the instance environment and the configuration of the monitoring target.

Note that in PFM - RM for Oracle you can associate one instance environment with only one monitoring target.

You can set up multiple instance environments and monitoring targets by repeating the procedure for each instance.

- Setting up instance information
- Setting monitoring target
- Registering objects in the Oracle Database
- Setting up the Oracle Database

For example, if you monitor three Oracle instances, repeat these procedures three times.

When you create an environment where there are multiple instances, the number of instances depends on the system configuration. As a guide, use three to five instances for the number of instances. You can increase the number of instances by reducing the number of records to be collected or lengthening the collection interval. Consider this carefully before operation.

This section describes the procedures for each of the actions.

(a) Set up instance information

You must specify instance information for the Oracle that is to be monitored by the PFM - RM for Oracle. Specify instance information on the PFM - RM host.

The following table lists the instance information items that are to be specified. You should check this information before you start the setup procedure. For details about the Oracle instance information items, see your Oracle documentation.

Table 2–19: PFM - RM for Oracle instance information

Item	Description	Specifiable value	Default
`oracle_sid`	Monitoring-target Oracle system identifier (the same value as the value of the `ORACLE_SID` environment variable)	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	The value specified for the `-inst` option of the `jpcconf inst setup` command
`oracle_home`[#1]	Oracle home folder of Oracle Client used by PFM - RM for Oracle (the same value as the value of the `ORACLE_HOME` environment variable) [#2]	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols:	--

Item	Description	Specifiable value	Default
oracle_home[#1]	Oracle home folder of Oracle Client used by PFM - RM for Oracle (the same value as the value of the ORACLE_HOME environment variable) [#2]	, < >	--
oracle_version[#1]	Version number of Oracle Client used by PFM - RM for Oracle To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, 12 is set.	A two-digit number. • Oracle 11g: 11 • Oracle 12c or later: 12	11
oracle_user[#3]	An account for monitoring Oracle For details about accounts that can be specified and the required privileges, see *(3) Create an Oracle account to be used in PFM - RM for Oracle*.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	sys
oracle_passwd[#3,#4]	A password for the account that was specified in oracle_user	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	--
net_service_name[#2,#5]	The net service name of a monitoring-target database. For details about the net service name of a monitoring-target database, see your Oracle documentation.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Instance name (the value of oracle_sid)
log_path[#6]	The full path name of the directory for storing agent log information	A character string within 245 bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < > Notes: • You can specify the path to a directory under the installation directory only when the default directory is set. • You cannot specify the path to a directory that is used as the output destination of another instance.	/opt/jp1pc/agt1/agent/*instance-name*/log
log_size	The maximum size of one agent log file[#7]	1 to 32 (in megabytes). The recommended value is 16 or greater.	16
timeout[#8]	The timeout period for Oracle access during a query.	0, or 10 to 3600 (in seconds). When 0 is specified, timeout monitoring is not performed. When a value from 1	0

Item	Description	Specifiable value	Default
timeout[#8]	The timeout period for Oracle access during a query.	to 9 is specified, it is changed to 10 at runtime. For details about timeouts, see *2.6.5 Cancellation facility for Oracle access during record collection*.	0
sql_option[#9]	When Y is specified, information about the following items[#7] is not collected for PI_PIDB and PD_PDTS records, and the value specified by 0 or numeric_10 is set.	{ Y | N }	N
numeric_10[#10]	When sql_option is set to Y, the value specified is set for items for which information is not collected. If sql_option is set to N, this specification is disregarded.	0 to 99999. Note that if the value specified exceeds the maximum value for the data format of the set field (32767 for short and 65535 for ushort), the maximum value for the data format is set.[#11]	0
startup_always	PFM - RM for Oracle may stop due to an Oracle connection error, such as when the monitored Oracle is still starting up when PFM - RM for Oracle starts up. If Y is specified, start processing continues even if a connection error occurs. If N is specified, start processing will stop if an error occurs.	{ Y | N }	Y
localtemp_option[#12]	Option for switching the display of the free space of the locally managed temporary tablespace of PD_PDDB, PI_PIDB, PD_PDDF, PI_PIDF, PD_PDTF, PD_PDTS, and PD_PCTS records. If Y is specified, display the size of the free space. If N is specified, display the size of the unallocated space.	{ Y | N }	N
nls_lang[#13]	Option for specifying the character encoding used for communication between PFM - RM for Oracle and Oracle Database.	Character code set: According to LANG of the OS when at the start time of the PFM - RM for Oracle. • UTF-8 (Japanese or Simplified-Chinese): {AMERICAN_AMERICA.US7ASCII | AMERICAN_AMERICA.AL32UTF8} • GB18030: {AMERICAN_AMERICA.US7ASCII | AMERICAN_AMERICA.ZHS32GB18030} • Other case: AMERICAN_AMERICA.US7ASCII	AMERICAN_AMERICA.US7ASCII
undospace_option[#14]	Option for switching how the value displayed as the free space in the UNDO tablespace of the PD_PDDB, PI_PIDB,	{ Y | N }	Y

Item	Description	Specifiable value	Default
undospace_option#14	PD_PDDF, PI_PIDF, PD_PDTS, and PD_PCTS records is determined. If N is specified, the size of the unallocated space is displayed. If Y is specified, the size of the free space is displayed.	{ Y | N }	Y

Legend:

--: None

#1

The prerequisite product for PFM - RM for Oracle version 10-50 or earlier was Oracle Client 32-bit. The prerequisite product for version 11-00 or later is Oracle Client 64-bit.

The setting method for version 10-50 or earlier cannot be used to connect to an Oracle Database. Therefore, you must set up PFM - RM for Oracle version 11-00 or later on the assumption that Oracle Client 64-bit is used.

Because instance information settings have been changed in version 11-00 or later as shown in the following table, make sure that the information is set up correctly:

Item	PFM - RM for Oracle	
	10-50 or earlier	11-00 or later
oracle_home	Specify the Oracle home folder for Oracle Client 32-bit.	Specify the Oracle home folder for Oracle Client 64-bit.
oracle_version	Specify the version of Oracle Client 32-bit.	Specify the version of Oracle Client 64-bit. To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, 12 is set.
net_service_name	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 32-bit.	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 64-bit.

Notes:

- To upgrade PFM - RM for Oracle 10-50 or earlier to 11-00 or later, instance information is subject to change, and must therefore be updated before starting the PFM - RM for Oracle service.

  Note that Oracle Client 32-bit is no longer needed, and can be uninstalled if it is not used by any product other than PFM - RM for Oracle.

- If you specify ORACLE_HOME for Oracle Client 32-bit and start PFM - RM for Oracle, the KAVL18011-E and KAVL18021-E message appear.

#2

If PFM - RM for Oracle uses the client library of an Oracle Database in which Oracle Client 64-bit has been installed, specify the Oracle home folder of the Oracle Database.

#3

PFM - RM for Oracle runs using Oracle password authentication.

#4

If the expiration date is set on oracle_passwd, once the password is out of date connections to Oracle fail so that PFM - RM for Oracle cannot collect the performance information. In order to avoid connection errors perform either of the following procedures before the password is expired:

- Unset the expiration date of the password

- After updating password, execute the `jpcconf inst setup` command to update `oracle_passwd`.

Note that the Oracle default profile is applied to the Oracle account created by `mk_rmus.sql`.

#5

Specify in advance the network service (such as tnsnames.ora) of the Oracle Client used by PFM - RM for Oracle.

Configure the network service definition (such as listener.ora) and run the listener process in advance.

When monitoring Oracle Database instances in an Oracle RAC configuration, set up the PFM - RM for Oracle so that it monitors Oracle Database instances on each node. For details about how to set up, see the Oracle documentation.

Note that the location of tnsnames.ora must be:

`oracle_home/network/admin`

If tnsnames.ora is located on other directory, must therefore set to TNS_ADMIN environment variable in starting user of PFM - RM for Oracle before starting the PFM - RM for Oracle service.

For details about the TNS_ADMIN environment variable, see the Oracle documentation.

#6

Manually save the old path information in a file as history data, since the information is not saved automatically. You may need to acquire the agent log information from the old directory if a problem occurs.

#7

A maximum of 4 agent log files are collected for one instance. Before specifying the `log_size` value, make sure that the value satisfies the following condition (this condition also applies when `log_path` is set to the default):

```
Amount of free space on the disk containing the directory specified in log
_path (MB) > log_size × 4
```

If the free disk space is insufficient, agent log cannot be output. For details about the agent log, see *7.3 Log information*.

#8

Set the timeout value according to the time needed to collect records during heavy load (peak time).

#9

To obtain each piece of Oracle segment-related information, PFM - RM for Oracle searches Oracle's static data dictionary views `DBA_SEGMENTS`. If a large number of segments (more than hundreds of thousands) exist for Oracle, information collection requires a significant amount of time. As such, when a large number of segments exist, and the information listed in the following table no longer needs to be collected, set the `sql_option` to `Y` during operation.

Table 2–20: Record names and the values specified for numeric_10 (setting up instance information)

Record name	PFM - View name	Value specified for numeric_10
PD_PDTS	Segments	Enabled
	Extents	Enabled
PI_PIDB	DB Files %	Enabled
	Log Files %	Enabled
	NextAlloc Fails	Enabled
	Tablespaces	Enabled
	Rollback Segments	Enabled

Record name	PFM - View name	Value specified for numeric_10
PI_PIDB	Rollback Segments Trans	Enabled
	Blocks	Enabled
	Segments	Enabled
	Extents	Enabled
	Free Mbytes	Enabled
	Overextended	Enabled
	High Max Extent	Enabled
	Datafiles	Enabled
	Mbytes	Enabled
	Free Extents	Enabled
	Free%	Enabled
	Free Change	Enabled
	Write%	Enabled
	Write/sec	Enabled
	Redo Files	Enabled
	Links	Enabled
	Links Logged On	Enabled
	Links In Tran	Enabled
	Links Open Cursors	Enabled
	Used Change	Enabled
	Used Mbytes	Enabled
	Rollback Segments Hit%	Enabled
	Sort Segments	Enabled
	Sorting Users	Enabled
	Physical Blocks Read	Always set to 0 because it is a delta item.
	Physical Blocks Written	Always set to 0 because it is a delta item.
	Physical Reads	Always set to 0 because it is a delta item.
	Physical Writes	Always set to 0 because it is a delta item.

#10

When displayed in PFM - Web Console, this item indicates whether the values set in each field in #9 are values collected from the Oracle Database, or fixed values.

#11

If the field format for each record is `float` or `double`, since the data is a floating-point number, it may be rounded depending on the specified value.

Example:

When `numeric_10` is set to `32767`, it may be displayed as `32760`.

#12

When `localtemp_option` is set to `Y`, collect free space of the locally managed temporary tablespace and information about the extents from v$sort_segment or v$temp_extent_pool of the dynamic performance view. The displayed values of the size of free space are calculated from the size of the used space.

When `localtemp_option` is set to `N`, collect free space of the locally managed temporary tablespace and information about the extents from v$temp_space_header of the dynamic performance view. The displayed values of the size of free space are the size of the unallocated space. Since the allocated space is not freed until the temporary tablespace is reconstructed or recreated, the displayed values of free space do not increase until the space is freed.

When issuing query to v$temp_extent_pool view, the Oracle instance goes to sleep. Since this may have effect on the performance of the Oracle instance, you need adequate consideration before `localtemp_option` is set to `Y`. For details, see your Oracle documentation.

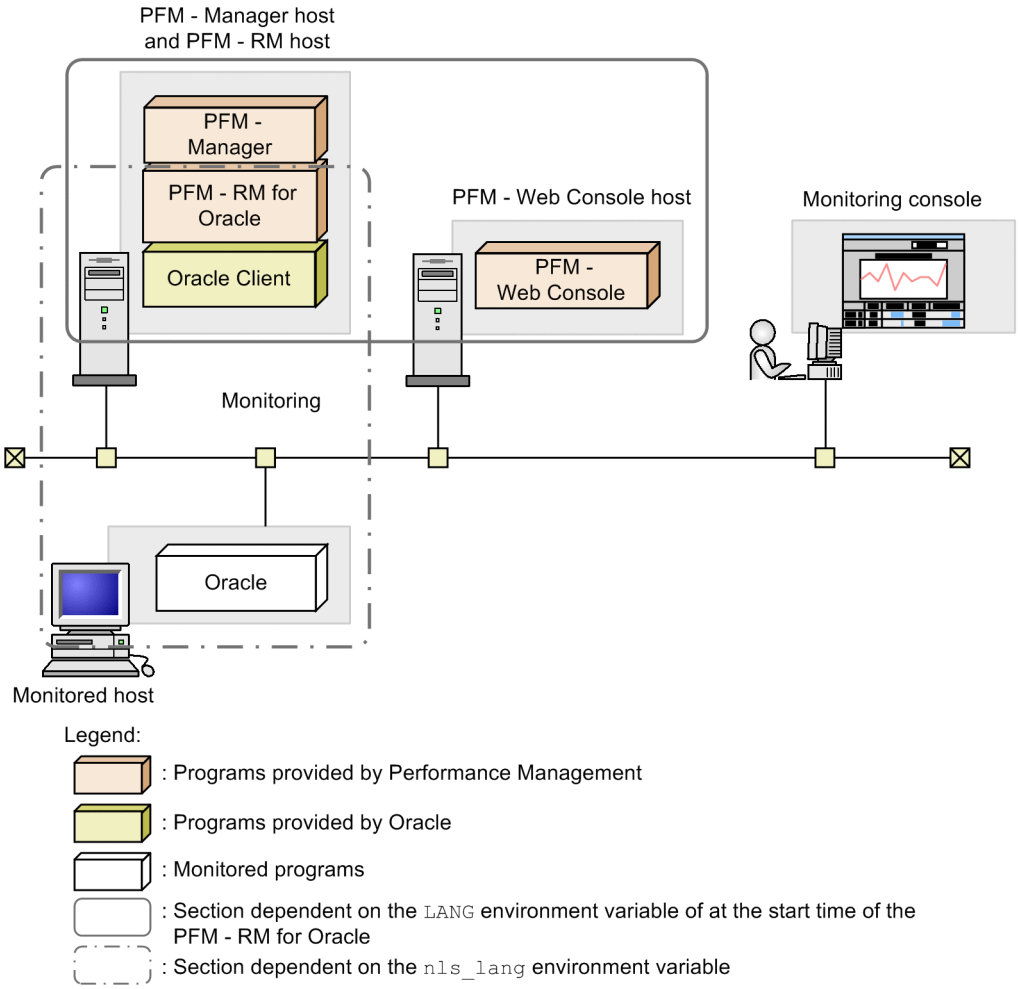
The following records use `v$temp_extent_pool` view:

- Data File (PD_PDDF)
- Data File Interval (PI_PIDF)

#13

The following figure shows the relationship among data, `LANG` environment variable of at the start time of the PFM - RM for Oracle, and instance information handled by PFM - RM for Oracle.

Figure 2–10: Relationship between data and the setting values



PFM - RM for Oracle can collect performance data in UTF-8 format (for Japanese and Chinese environment) and GB18030 format (for Chinese environment) as well as 7-bit ASCII format.

The following table lists the values that can be set in nls_lang instance information for the LANG environment variable at the start time of PFM - RM for Oracle:

LANG environment variable of at the start time of PFM - RM for Oracle	nls_lang instance information (this item)
ja_JP.UTF-8, ja_JP.utf-8, zh_CN.UTF-8, zh_CN.utf8	AMERICAN_AMERICA.AL32UTF8 or AMERICAN_AMERICA.US7ASCII#
zh_CN.gb18030	AMERICAN_AMERICA.ZHS32GB18030 or AMERICAN_AMERICA.US7ASCII#
Other than the above	AMERICAN_AMERICA.US7ASCII#

#
Performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

For any other combination, performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

For details about how to set the LANG environment variable of the OS, see *2.2.4(1) Set the LANG environment variable*.

When you specify an invalid character code set for the nls_lang instance information, the message KAVL18302-W with errcode 12705 is output, and the connection with Oracle will fail.

In the following cases as well, unreadable or lack of characters might occur in the performance data:

1. The Oracle column length is exceeded.

   If you store data that exceeds the Oracle column length, the last character might become unreadable. If you use PFM - RM for Oracle to collect data in Oracle and that data contains unreadable characters, the last character of the performance data will be unreadable.

2. The field size of PFM - RM for Oracle is exceeded.

   PFM - RM for Oracle collects performance data of the record field size from Oracle. Therefore, if Oracle contains data that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name	Field size (Unit: bytes)
Parameter Values (PD_PDP)	Value	512
SQL Text (PD_PDSQ)	Explain Plan	30000
	SQL Text	30000

3. Unreadable or lack of characters in different between database character set of the Oracle and nls_lang instance variable of the PFM - RM for Oracle.

   A data of 2 bytes on the basis of Oracle may be collected at 3 bytes when you set AMERICAN_AMERICA.AL32UTF8 in nls_lang and a database character set for the monitoring is not UTF-8. Therefore, if performance data takes from ORACLE that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name	Field size (Unit: bytes)
Collection Tablespace 2(PD_PCTS)	Tablespace Name	30
Collection Instance 2 (PD_PCI)	Recovery File Dest	513
Data File(PD_PDDF)	File Name	513

Record name	Field name	Field size (Unit: bytes)
Data File(PD_PDDF)	Tablespace Name	30
Data File Interval(PI_PIDF)	File Name	513
	Tablespace Name	30
Database(PD_PDDB)	DB Name	9
Database Interval(PI_PIDB)	DB Name	9
Instance(PD_PDI)	Host	64
Lock Waiters(PD_PDLW)	Holding User	30
	Waiting User	30
Minimum Database Interval 2(PI_PMDB)	DB Name	9
Minimum Data File Interval 2(PI_PMDF)	File Name	513
Minimum Tablespace Interval 2(PI_PMTS)	Tablespace Name	30
Open Cursor(PD_PDOC)	Program	48
	SQL Text	60
Parameter Values(PD_PDP)	Value	512
Session Detail(PD_PDS)	Machine	64
	Module	48
	OS User	30
	Program	64
	Schema Name	30
	User	30
Session I/O Interval(PI_PIIO)	User	30
Session Statistics Summary(PD_PDS2)	Program	48
	User	30
SQL Text(PD_PDSQ)	Explain Plan	30,000
	SQL Text	30,000
Tablespace Fragmentation(PD_PDTF)	Tablespace Name	30
Tablespace Interval(PI_PITS)	Tablespace Name	30
Tablespace(PD_PDTS)	Tablespace Name	30
Transaction(PD_PDTR)	User	30
Transaction Lock(PD_PDTL)	Object Name	30
	Owner	30
	User	30

#14

When `undospace_option` is set to `N`, the size of the unallocated space is collected as the amount of free space in the UNDO tablespace. Space in the UNDO tablespace that becomes available because its retention period has expired is treated as allocated space until it is released.

When undospace_option is set to Y, the size of the free space is collected as the amount of free space in the UNDO tablespace. Space of the UNDO tablespace that becomes available because its retention period has expired is included in the size of the free space.

The following table shows the fields whose values change depending on the specification of the undospace_option:

Record name	Field name
Data File (PD_PDDF)	Free %
	Free Mbytes
	Used Mbytes
Data File Interval (PI_PIDF)	Free %
	Free Change
	Free Mbytes
	Used Change
	Used Mbytes
Database (PD_PDDB)	Free %
	Free Mbytes
	Used Mbytes
Database Interval (PI_PIDB)	Free %
	Free Change
	Free Mbytes
	Used Change
	Used Mbytes
Tablespace (PD_PDTS)	Free %
	Free Mbytes
	Used Mbytes
	Max Extend Free %
	Max Extend Free Mbytes
Collection Tablespace 2 (PD_PCTS)	Free Mbytes

Notes:

- The PFM - RM for Oracle services can be started only when an instance environment has been set up.
- When you use the jpcconf inst setup command to create an instance environment, the command terminates normally even if an instance name that does not exist in Oracle is specified. However, if you then start record collection, message KAVL18401-W is output to the common message log, and you cannot connect to the monitored Oracle. If this problem occurs, check whether you specified the correct instance name, and re-execute the jpcconf inst setup command with the correct instance name specified.
- Do not use multiple PFM - RM for Oracle services to monitor the same Oracle instance. Do not use PFM - RM for Oracle and PFM - Agent for Oracle to monitor the same Oracle instance.

- Do not set Oracle9i as the monitoring target of PFM - RM for Oracle. If so, "KAVL18501-E" is output to the common message log and PFM - RM for Oracle stops.

An instance environment is created by using the `jpcconf inst setup` command. The following procedure shows how to create an instance environment.

To create an instance environment:

1. Execute the `jpcconf inst setup` command with a service key and instance name specified.

   For example, when you want to create the instance environment for the PFM - RM for Oracle instance named `SDC`, use the following command line:

   ```
   jpcconf inst setup -key RMOracle -inst SDC
   ```

   Note that you cannot use `sql` as an instance name.

   For details about the `jpcconf inst setup` command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

2. Set up Oracle instance information.

   Enter the values for the items listed in Table 2-19 as prompted by the command. All items are mandatory. To use the default value displayed for an item, only press the **Enter** key.

When all values have been entered, the instance environment is created. If you want to change the instance information, re-execute the `jpcconf inst setup` command to update the instance environment. For details about updating an instance environment, see *2.6.3 Updating an instance environment*.

The following describes the created instance environment.

- Directory configuration of the instance environment

  The instance environment is set up in the following directory:

  For a physical host: `/opt/jp1pc/agt1`

  For a logical host: *environment-directory*[#]`/jp1pc/agt1`

  #

  The environment directory is a directory on the shared disk specified when the logical host was created.

  The following table describes the directory configuration of the created instance environment.

  Table 2–21: Directory configuration of the instance environment

Directory and file			Description
`agent`	*instance-name*	`jpcagt.ini`	Remote Monitor Collector service startup initialization file
		`jpcagt.ini.model`[#]	Model file for the Remote Monitor Collector service startup initialization file
		`status.dat`	Relay file for internal processing
		`tstatuses.dat`	Status information file for virtual agent
		`targetlist.ini`	List file for monitoring target
		`grouplist.ini`	List file for monitoring group
		`GARULES.DAT`	List file containing a description of the grouping rules
		`targets`	Storage directory for remote agent

Directory and file			Description
agent	*instance-name*	groups	Storage directory for group agent
		log	Storage directory for log files
store	*instance-name*	jpcsto.ini	Remote Monitor Store service startup initialization file
		jpcsto.ini.model#	Model file for the Remote Monitor Store service startup initialization file
		*.DB	Performance data file
		*.IDX	Index file for performance data file
		*.LCK	Lock file for performance data file
		status.dat	Relay file for internal processing
		*.DAT	Data model definition file
		dump	Export destination directory
		import	Standard database import destination directory
		backup	Backup destination directory
		log	Storage directory for log files
		partial	Standard database partial backup destination directory
		STPD	Performance data storage destination directory for records of the PD record type
		STPI	Performance data storage destination directory for records of the PI record type

#

This file is used to reset all values to the initial values set when the instance environment was created.

- Service ID for the instance environment
  The service for the instance environment has the following format:
  - Remote Monitor Collector service:
    1A*instance-number instance-name* [*host-name*]
  - Remote Monitor Store service:
    1S*instance-number instance-name* [*host-name*]
  - Group Agent service:
    1A*instance-number instance-name* [*host-name*]

  In PFM - RM for Oracle, the instance name specified in the `jpcconf inst setup` command is displayed.

  For example, if you execute the command with host name host1 and instance name SDC, the service IDs will be as follows:
  - Remote Monitor Collector service:
    1A1SDC [host1]
  - Remote Monitor Store service:
    1S1SDC [host1]
  - Group Agent service:
    1A1SDC [All@host1]

For details about the service ID, see the naming rules described in Appendix in the *JP1/Performance Management Planning and Configuration Guide*.

(b) Set the monitoring target

When you set the monitoring target, you associate the instance that you specify in *(a) Set up instance information* with the information about the monitoring target host.

Set the monitoring target on PFM - RM host.

You must specify the information shown in the following table. Before you set the monitoring target, check the information in advance.

Table 2–22: Configuration for the monitoring target of PFM - RM for Oracle

Item	Description	Specifiable value	Default value	Changeable
`Target Host`	Oracle host name for monitoring target. If the Oracle host is a logical host, specify the logical host.	Host names can consist of 1 to 32 alphanumeric characters and hyphen. Note that you cannot specify a (logical) host name beginning with a hyphen. Physical and logical host names must be unique within the system.#1	--#2	Changeable

Legend:

--: None

#1

You cannot specify "ALL" because "ALL" is a reserved word for group agent.

#2

If you omit the specification, the host name of the PFM - RM host is assumed.

Notes:

- You must set the monitoring target to start PFM - RM for Oracle.

  If PFM - RM for Oracle starts without specifying the monitoring target, it outputs "KAVL18639-E" to the common message log and then stops.
- PFM - RM for Oracle identifies the monitoring target Oracle instance by oracle_sid that is set in the instance environment.

  The host name specified as `Target Host` is used only in a health check and is not used to connect to the Oracle instance.

  If invalid host names are set to `Target Host`, the status for collecting performance data may not be consistent with the result of the health check.
- Even if you set an invalid value for Target host, the `jpcconf target setup` command ends successfully.
- If you are running a firewall environment on the host of the monitoring target Oracle instance, set up the firewall environment so that the Oracle client used by PFM - RM for Oracle can successfully connect to the Oracle host. For details about Oracle environment setup, see your Oracle documentation. After Oracle environment setup, make sure that you can execute the Oracle sqlplus command in that environment.

In order to set up the monitoring target environment, execute the jpcconf target setup command. To set up the monitoring target environment:

1. Execute the `jpcconf target setup` command specified with the service key, the instance name, and the monitoring target name.

```
jpcconf target setup -key RMOracle -inst instance-name -target monitoring-target-name
```

2. Specify the monitoring target information of PFM - RM for Oracle

   Enter the information shown in Table 2-22 in accordance with the command's instructions. You must enter all of the information items. To use the displayed default value, press the Enter key.

After you have finished entering the information, the monitoring target environment is set up in *installation-directory*`/agt1`. If you want to change the monitoring target information, re-execute the `jpcconf target setup` command and update the monitoring target environment. For details about updating the monitoring target environment, see *2.6.2 Updating a monitoring target*.

Table 2-23 shows the organization of the monitoring target environment folder:

Table 2–23: Organization of the monitoring target environment folder

Directory name and file name				Description
`agent`	Instance name	`targets`	*Monitoring-target-name*`.ini`	Configuration file for the monitoring target
			Monitoring-target-name`.ini.model`	Model configuration file for the monitoring target

(c) Registering objects in the Oracle Database

To use PFM - RM for Oracle to monitor an Oracle Database, you must register the objects provided by PFM - RM for Oracle in the Oracle Database. The objects are registered by using an SQL script provided by PFM - RM for Oracle. The following procedure shows how to execute the SQL script. Note that the procedure is used only once for each account with which the Oracle Database instance is to be monitored.

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, register objects in the PDBs to be monitored. If you use the `sys` account, execute the `sp_rist.sql` script for each PDB to be monitored. When monitoring the root container (`CDB$ROOT`), do not register objects in it because objects are not used for monitoring.

To execute the SQL script:

1. Set up an environment where the `sqlplus` Oracle command can be executed.

   For details about Oracle environment setup, see your Oracle documentation.

2. Navigate to the following directory, which contains the `sp_rist.sql` file provided by PFM - RM for Oracle:

```
/opt/jp1pc/agt1/agent/sql
```

3. Execute the `sp_rist.sql` script for the Oracle Database that you want to monitor.

   Connect to the Oracle Database by using the account specified by `oracle_user` in the instance information, and then execute the `sp_rist.sql` script.

   The `sp_inst.sql` script will register with Oracle the objects (procedures for monitoring and tables for operation) PFM - RM for Oracle needs to perform Oracle monitoring.

   Example:

If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

sqlplus *Oracle-account/password-for-the-Oracle-account@net-service-name-for-the-monitoring-target-database* @sp_rist.sql

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

sqlplus *Oracle-account/password-for-the-Oracle-account@net-service-name-for-the-monitoring-target-PDB* @sp_rist.sql

- The sqlplus command is provided by Oracle Corporation.
- Specify the oracle_user value as the Oracle account. The objects are created in the database with the Oracle account used here. You must specify the same Oracle account when setup of the instance environment is canceled.
- When you use a SYS user for the Oracle account, executing the sp_rist.sql script without specifying the AS SYSDBA option may result in an error. If an error occurs, execute the script with the AS SYSDBA option specified.

When the above command is executed, the table and packages shown in the following table are created.

Table 2–24: Table and packages to be created

Table	Package
LSC_14_PLAN_TABLE#	LSC_14_PDAS, LSC_14_73_PDDB, LSC_14_PDDB2, LSC_14_PDI, LSC_14_73_PIDB, LSC_14_PIDB2, LSC_14_PIDB3

#

LSC_14_PLAN_TABLE is only used during collection of the SQL Text (PD_PDSQ) record. Therefore, when you collect the SQL Text (PD_PDSQ) record, make sure that at least 5 megabytes of free space is allocated to the default tablespace.

(d) Setting up the Oracle Database

To use the records provided by PFM - RM for Oracle to collect the performance data items listed in the following table, you must set the TIMED_STATISTICS Oracle Database initialization parameter to TRUE.

Table 2–25: Items that can be collected only when TIMED_STATISTICS=TRUE is set

Record	Field
ASM Disk (PD_PDDK)	Read Time (READ_TIME)
	Write Time (WRITE_TIME)
Data File Interval (PI_PIDF)	Write Time (WRITE_TIME)
Session Detail (PD_PDS)	Avg Wait (AVERAGE_WAIT)
	Avg Wait String (AVERAGE_WAIT_STRING)
	Time Waited (TIME_WAITED)
	Time Waited String (TIME_WAITED_STRING)
Session Statistics Summary (PD_PDS2)	Statement CPU (STATEMENT_CPU)
System Stat Summary (PD)	Session CPU Usage (SESSION_CPU_USAGE)
System Stat Summary Interval (PI)	Session CPU Usage (SESSION_CPU_USAGE)

Notes:

- If you modify the initialization parameters file, you must restart the instance's database.
- A value change you make in the server parameters file may take precedence over a change made to the initialization parameters file.
- Setting the `TIMED_STATISTICS` initialization parameter to `TRUE` may have adverse effects on the performance of the Oracle Database. If you plan to use this setting, you should first evaluate the possible effects. For details, see your Oracle documentation.

(5) Specifying network settings Option

You must specify the network settings according to the configuration in which Performance Management is used.

The following are the two network setting items:

- IP addresses

  Set the IP addresses when using Performance Management in a network environment where multiple LANs are connected. You can set multiple IP addresses by defining the host names and IP addresses in the `jpchosts` file. Use the same `jpchosts` file throughout the Performance Management system.

  For details, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

- Port numbers

  Specify the port numbers to be used by Performance Management. To avoid conflicts, use the same port numbers and service names across the Performance Management system.

  For details about setting port numbers, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

(6) Change the size of log files Option

The operational status of Performance Management is output to Performance Management's own log file. This log file is called the common message log. Modify this setting if you want to change the file size.

For details, see the chapter explaining installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

(7) Change the storage location of performance data Option

Perform this setting if you want to change the folders where the database of performance data managed by PFM - RM for Oracle is saved, backed up, or exported.

By default, performance data is saved in the following locations:

- Save destination directory: `/opt/jp1pc/agt1/store/`*instance-name*`/`
- Backup destination directory: `/opt/jp1pc/agt1/store/`*instance-name*`/backup/`
- Partial backup destination directory: `/opt/jp1pc/agt1/store/`*instance-name*`/partial`
- Export destination directory: `/opt/jp1pc/agt1/store/`*instance-name*`/dump/`
- Import destination directory: `/opt/jp1pc/agt1/store/`*instance-name*`/import`

Note:

For the default save destination for logical host operation, replace `/opt/jp1pc` with *environment-directory*`/jp1pc`.

For details, see *2.6.1 Changing the storage location of performance data*.

(8) Set the connection-target PFM - Manager of PFM - RM for Oracle

On each host on which a PFM - RM for Oracle program is installed, set the connection-target PFM - Manager program that is to manage the PFM - RM for Oracle. Use the `jpcconf mgrhost define` command to set the connection-target PFM - Manager.

Notes:

- When multiple instances of PFM - RM are installed on a single host, you can specify only one PFM - Manager as their connection target. You cannot have a different instance of PFM - Manager as the connection target for each PFM - RM.
- When PFM - RM for Oracle is installed on the same host as PFM - Manager, the connection-target PFM - Manager will be the PFM - Manager on the local host. You cannot change this.

To set the connection-target PFM - Manager:

1. Stop all Performance Management programs and services.

   Stop all active Performance Management programs and services on the host before beginning setup. For details about how to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

   If any Performance Management programs or services are running when you execute the `jpcconf mgrhost define` command, you will be prompted by a message to stop the programs or services.

2. Execute the `jpcconf mgrhost define` command with the host name of the PFM - Manager host you wish to use specified as the connection target.

   For example, if the PFM - Manager you wish to use as the connection target resides on host `host01`, execute the command as follows:

   ```
   jpcconf mgrhost define -host host01
   ```

(9) Setting up the action log Option

This setting is required to output action logs when alarms occur. The action log stores history information that is output in conjunction with the alarms for thresholds related to system load and other conditions.

For details about how to set up the action log, see *K. Outputting Action Log Information*.

2.3 Setup cancellation and uninstallation (Windows)

This section describes the procedures for uninstalling and canceling setup of PFM - RM for Oracle.

2.3.1 Cautionary notes on setup cancellation and uninstallation (Windows)

Note the following when uninstalling and canceling setup of PFM - RM for Oracle.

(1) Note on OS user permission required to uninstall PFM - RM for Oracle

Before you uninstall PFM - RM for Oracle, make sure that you have logged on with an account that belongs to the Administrators group.

(2) Note on network configuration

When you uninstall a Performance Management program, the port numbers defined in the `services` file will remain in the file.

(3) Notes on programs

- If you uninstall a Performance Management program while another Performance Management program or service or other program that references Performance Management files (for example, Windows Event Viewer) is running, some files or folders may remain in the system. In this case, manually delete everything under the installation folder.
- If you uninstall a Performance Management program while another Performance Management program or service or other program that references Performance Management files (for example, Windows Event Viewer) is running, you may be prompted to restart the system. If you are prompted to restart the system, restart the system to complete the uninstallation process.
- If both PFM - Base and PFM - RM for Oracle are installed on a host, you cannot uninstall PFM - Base without first uninstalling PFM - RM for Oracle. In this case, uninstall PFM - RM for Oracle and then PFM - Base, in that order. The same applies when both PFM - Manager and PFM - RM for Oracle are installed on a host. You will be unable to uninstall PFM - Manager without first uninstalling PFM - RM for Oracle. In this case, uninstall PFM - RM for Oracle and then PFM - Manager, in that order.

(4) Notes on services

- Before uninstalling PFM - Manager, stop all active Performance Management programs and services throughout the entire system.
- Uninstalling PFM - RM for Oracle does not delete the information about the service from the list that appears when you execute the `jpctool service list` command. To delete this information, use the `jpctool service delete` command.
- For details about deleting the information about the service, see the section about deleting the service in the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.
- Note that when you want to update the PFM - Web Console host to reflect the deletion of service information, you need to execute the `jpctool service sync` command to synchronize the agent information of the PFM - Manager host and that of the PFM - Web Console host.

- If you uninstall PFM - Manager and then re-install it on the same machine, the Trap Generator service may appear twice when you execute the `jpctool service list` command. In this case, start the PFM - Manager service and use the `jpctool service delete` command to delete the Trap Generator service listed as `Inactive`.

(5) Other notes

- When uninstalling a Performance Management program from a host on which PFM - Web Console is installed, close all browser windows before you uninstall the program.
- Before you start uninstallation, use the `jpcconf inst setup` command or PFM - Web Console to check the agent log output folder. If this folder has been changed from the default folder (*installation-folder*`\agt1\store\`*instance-name*`\log\`), the agent log files remain after uninstallation. Manually delete these files after uninstallation.

2.3.2 Procedure for canceling setup (Windows)

This subsection describes how to cancel setup of PFM - RM for Oracle.

(1) Canceling setup of an instance environment

Canceling setup of an instance environment involves the tasks listed below. To cancel setup of multiple instance environments, you must repeat the procedure for each environment.

- Deleting a monitoring target
- Deleting an instance environment
- Deleting the objects registered in the Oracle Database

The following describes the above tasks.

(a) Deleting a monitoring target

Check a monitoring target name before deleting the monitoring target. Delete the monitoring target on the PFM - RM host.

Use the `jpcconf target list` command to check the monitoring target name. Use the `jpcconf target unsetup` command to delete the monitoring target.

The following procedure describes how to delete a monitoring target.

1. Check the monitoring target name.

   Execute the `jpcconf target list` command specified with the service key and the instance name that indicate the PFM - RM for Oracle whose monitoring target name you are going to delete.

   ```
   jpcconf target list -key RMOracle -inst instance-name
   Targets:
   targethost1
   targethost2
   Groups:
   All
   ```

2. Stop the PFM - RM for Oracle service if the service is running in the instance environment.

For details about how to stop the service, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

3. Delete the monitoring target

   Execute the `jpcconf target unsetup` command specified with the service key, the instance name, and the monitoring target name that indicate PFM - RM for Oracle whose monitoring target you are going to delete.

```
jpcconf target unsetup -key RMOracle -inst instance-name -target monitorin
g-target-name
```

If the `jpcconf target unsetup` command ends successfully, the Oracle host specified by the monitoring target is no longer monitored.

Notes:

- Canceling setup of the monitoring target does not delete the service information that is displayed with the `jpctool service list` command. Accordingly, use the `jpctool service delete` command to delete the service information on the host on which PFM - Manager has been installed. After executing the command, restart PFM - Manager.
- If you delete the monitoring target while PFM - RM for Oracle is still running, the following message is output to the common message log and PFM - RM for Oracle stops: "KAVL18639-E ".

For the details about the commands, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

(b) Deleting an instance environment

Check the instance name and delete the instance environment. Deletion of an instance environment is performed from a PFM - RM host.

To check the instance name, use the `jpcconf inst list` command. To delete an instance environment that has been created, use the `jpcconf inst unsetup` command.

To delete an instance environment:

1. Check the instance name.

   Execute the `jpcconf inst list` command specified with the service key that indicates PFM - RM for Oracle. The following shows the command format:

```
jpcconf inst list -key RMOracle
```

   For example, if the instance name is `SDC`, the command displays `SDC`.

2. Stop all active PFM - RM for Oracle services in the instance environment.

   For details about how to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

3. Delete the instance environment.

   Execute the `jpcconf inst unsetup` command specified with the service key that indicates PFM - RM for Oracle and the instance name.

   For example, if the instance name is `SDC`, use the following command line:

```
jpcconf inst unsetup -key RMOracle -inst SDC
```

If execution is successful, the folders created as the instance environment are deleted, as well as the service IDs and Windows services.

Note:

Canceling setup of an instance environment does not delete the service information that is displayed with the `jpctool service list` command. Use the `jpctool service delete` command to delete service information.

If you want to update the PFM - Web Console host to reflect the deletion of instance environment, you need to execute the `jpctool service sync` command to synchronize the agent information of the PFM - Manager host and that of the PFM - Web Console host.

The following shows sample conditions and a command line applicable for the conditions.

- Instance name: `SDC`
- Host name: `host03`
- Service ID of the Remote Monitor Collector service: 1`A1SDC[host03]`
- Service ID of the Remote Monitor Store service: 1`S1SDC[host03]`

```
jpctool service delete -id 1?1SDC[host03] -host host03
```

For details about the command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

(c) Deleting the objects registered in the Oracle Database

This subsection describes the procedure for deleting the table and packages that were created in the Oracle Database being monitored. To execute this procedure, you must use the same Oracle account that you used when you registered the objects in the Oracle Database. Note that this procedure must be used only once for each account that is used to monitor the Oracle Database instance.

To delete the objects registered in the Oracle Database:

1. Set up an environment where the Oracle `sqlplus` command can be executed.

   For details about Oracle environment setup, see your Oracle documentation.

2. Navigate to the following folder that contains the `sp_rdrp.sql` script provided by the PFM - RM for Oracle:

   ```
   installation-folder\agt1\agent\sql
   ```

3. Execute the `sp_rdrp.sql` script on the Oracle Database being monitored.

   PFM - RM for Oracle deletes monitoring procedures, work tables, and other objects that are required to monitor Oracle from Oracle.

   Example:

   If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

   `sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-of-the-monitoring-target-database* `@sp_rdrp.sql`

   If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

   `sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account* `@`*net-service-name-of-the-monitoring-target-PDB* `@sp_rdrp.sql`

   - `sqlplus` is a command provided by Oracle Corporation.

- *Oracle-account* is the same Oracle account that was used to register the objects in the database.

LSC_14_PLAN_TABLE is placed in DBA_RECYCLEBIN and is not deleted completely. If you want to delete LSC_14_PLAN_TABLE completely, execute the `PURGE TABLE LSC_14_PLAN_TABLE;` command.

Note that if the Oracle account is `sys`, `LSC_14_PLAN_TABLE` is not stored in `DBA_RECYCLEBIN`. Therefore, you do not need to execute the `PURGE TABLE LSC_14_PLAN_TABLE;` command.

4. Reset the value of the `TIMED_STATISTICS` Oracle initialization parameter.

   If the value of the `TIMED_STATISTICS` Oracle initialization parameter has been changed in order to collect records of PFM - RM for Oracle, reset the value, if necessary.

(2) Deleting an Oracle account used in PFM - RM for Oracle

Oracle accounts used in PFM - RM for Oracle are authorized to change the objects of other schemas freely in order to monitor the Oracle Database. For this reason, unnecessary Oracle accounts must be deleted. If the tablespaces that were used by a deleted account are unnecessary, also delete the tablespaces.

(a) Deleting an Oracle account

To delete an Oracle account, issue the `DROP USER` statement in an environment where the `sqlplus` Oracle command can be executed. Before issuing the statement, make sure that your Oracle account has the `DROP USER` system privilege.

To delete an Oracle account:

1. Issue the `DROP USER` statement.

   Example:

   ```
   DROP USER Oracle-account CASCADE;
   ```

   If you add the `CASCADE` option, you can also delete the objects owned by the account.

For details about the `DROP USER` statement, see your Oracle documentation.

(b) Deleting the tablespaces used by a deleted Oracle account

When an Oracle account is deleted, the tablespaces used by the Oracle account become unnecessary. To delete these tablespaces, issue the `DROP TABLESPACE` statement in an environment where the `sqlplus` Oracle command can be executed. Before issuing the statement, make sure that your Oracle account has the `DROP TABLESPACE` system privilege.

To delete tablespaces:

1. Issue the `DROP TABLESPACE` statement.

For details about the `DROP TABLESPACE` statement, see your Oracle documentation.

2.3.3 Procedure for uninstallation (Windows)

To uninstall PFM - RM for Oracle:

1. On the host from which you want to uninstall PFM - RM for Oracle, log on as a member of the Administrators group.

2. Stop all Performance Management programs and services on the local host.

   Display the service information and check whether any services are running. For details about how to display service information and to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

   Stop all Performance Management programs and services running on the local host. This includes services running on physical and logical hosts.

3. Select the Performance Management program you want to uninstall.

   In Windows **Control Panel**, choose **Programs and Features**, and then select the Performance Management program you want to uninstall.

4. Click **Remove**, and then click **OK**.

   The program you selected is uninstalled.

Precaution:

If user account control (UAC) functionality is enabled on the OS, the User Account Control dialog box might be displayed during uninstallation. If this dialog box is displayed, click the **Continue** button to continue uninstallation. If you click the **Cancel** button, the uninstallation is canceled.

2.4 Setup cancellation and uninstallation (UNIX)

This section describes the procedures for uninstalling and canceling setup of PFM - RM for Oracle.

2.4.1 Cautionary notes on setup cancellation and uninstallation (UNIX)

Note the following when uninstalling and canceling setup of PFM - RM for Oracle for Oracle.

(1) Note on OS user permission required to uninstall PFM - RM

Before you uninstall PFM - RM, make sure that you have logged in as a superuser

(2) Note on network configuration

When you uninstall a Performance Management program, the port numbers defined in the `services` file will remain in the file.

(3) Notes on programs

- If you uninstall a Performance Management program while another Performance Management program or service or other program that references Performance Management files is running, some files or directories may remain in the system. In this case, manually delete everything under the installation directory.
- If both PFM - Base and PFM - RM for Oracle are installed on a host, you cannot uninstall PFM - Base without first uninstalling PFM - RM for Oracle. In this case, uninstall PFM - RM for Oracle and then PFM - Base, in that order. The same applies when both PFM - Manager and PFM - RM for Oracle are installed on a host. You will be unable to uninstall PFM - Manager without first uninstalling PFM - RM for Oracle. In this case, uninstall PFM - RM for Oracle and then PFM - Manager, in that order.

(4) Notes on services

- Before uninstalling PFM - Manager, stop all active Performance Management programs and services throughout the entire system.
- Uninstalling PFM - RM for Oracle does not delete the information about the service from the list that appears when you execute the `jpctool service list` command. To delete this information, use the `jpctool service delete` command.
- For details about deleting the information about the service, see the section about deleting the service in the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.
- Note that when you want to update the PFM - Web Console host to reflect the deletion of service information, you need to execute the `jpctool service sync` command to synchronize the agent information of the PFM - Manager host and that of the PFM - Web Console host.
- If you uninstall PFM - Manager and then re-install it on the same machine, the Trap Generator service may appear twice when you execute the `jpctool service list` command. In this case, start the PFM - Manager service and use the `jpctool service delete` command to delete the Trap Generator service listed as `Inactive`.

(5) Other notes

Before you start uninstallation, use the `jpcconf inst setup` command or PFM - Web Console to check the agent log output directory. If this directory has been changed from the default directory (`/opt/jp1pc/agt1/agent/`*instance-name*`/log`), the agent log files remain after uninstallation. Manually delete these files after uninstallation.

2.4.2 Procedure for canceling setup(UNIX)

This subsection describes how to cancel setup of PFM - RM for Oracle.

(1) Canceling setup of an instance environment

Canceling setup of an instance environment involves the tasks listed below.

To cancel setup of multiple instance environments, you must repeat the procedure for each environment.

- Deleting a monitoring target
- Deleting an instance environment
- Deleting the objects registered in the Oracle Database

The following describes the above tasks.

(a) Deleting a monitoring target

Check a monitoring target name before deleting the monitoring target. Delete the monitoring target on the PFM - RM host.

Use the `jpcconf target list` command to check the monitoring target name. Use the `jpcconf target unsetup` command to delete the monitoring target.

The following procedure describes how to delete a monitoring target.

1. Check the monitoring target name.

   Execute the `jpcconf target list` command specified with the service key and the instance name that indicate the PFM - RM for Oracle whose monitoring target name you are going to delete.

   ```
   jpcconf target list -key RMOracle -inst instance-name
   Targets:
   targethost1
   targethost2
   Groups:
   All
   ```

2. Stop the PFM - RM for Oracle service if the service is running in the instance environment.

   For details about how to stop the service, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

3. Delete the monitoring target.

   Execute the `jpcconf target unsetup` command specified with the service key, the instance name, and the monitoring target name that indicate PFM - RM for Oracle whose monitoring target you are going to delete.

```
jpcconf target unsetup -key RMOracle -inst instance-name -target monitoring-target-name
```

If the `jpcconf target unsetup` command ends successfully, the Oracle host specified by the monitoring target is no longer monitored.

Notes:

- Canceling setup of the monitoring target does not delete the service information that is displayed with the `jpctool service list` command. Accordingly, use the `jpctool service delete` command to delete the service information on the host on which PFM - Manager has been installed. After executing the command, restart PFM - Manager.
- If you delete the monitoring target while PFM - RM for Oracle is still running, the following message is output to the common message log and PFM - RM for Oracle stops: "KAVL18639-E ".

For the details about the commands, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

(b) Deleting an instance environment

Check the instance name and delete the instance environment. Deletion of an instance environment is performed from a PFM - RM host.

To check the instance name, use the `jpcconf inst list` command. To delete an instance environment that has been created, use the `jpcconf inst unsetup` command.

To delete an instance environment:

1. Check the instance name.

   Execute the `jpcconf inst list` command specified with the service key that indicates PFM - RM for Oracle. The following shows the command format:

   ```
   jpcconf inst list -key RMOracle
   ```

   For example, if the instance name is `SDC`, the command displays `SDC`.

2. Stop all active PFM - RM for Oracle services in the instance environment.

   For details about how to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

3. Delete the instance environment.

   Execute the `jpcconf inst unsetup` command specified with the service key that indicates PFM - RM for Oracle and the instance name.

   For example, if the instance name is `SDC`, use the following command line:

   ```
   jpcconf inst unsetup -key RMOracle -inst SDC
   ```

   If execution is successful, the directories created as the instance environment are deleted, as well as the service IDs.

Note:

Canceling setup of an instance environment does not delete the service information that is displayed with the `jpctool service list` command. Use the `jpctool service delete` command to delete service information.

If you want to update the PFM - Web Console host to reflect the deletion of instance environment, you need to execute the `jpctool service sync` command to synchronize the agent information of the PFM - Manager host and that of the PFM - Web Console host.

The following shows sample conditions and a command line applicable for the conditions.

- Instance name: `SDC`
- Host name: `host03`
- Service ID of the Remote Monitor Collector service: `1A1SDC[host03]`
- Service ID of the Remote Monitor Store service: `1S1SDC[host03]`

```
jpctool service delete -id 1?1SDC[host03] -host host03
```

For details about the command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

(c) Deleting the objects registered in the Oracle Database

This subsection describes the procedure for deleting the table and packages that were created in the Oracle Database being monitored. To execute this procedure, you must use the same Oracle account that you used when you registered the objects in the Oracle Database. Note that this procedure must be used only once for each account that is used to monitor the Oracle Database instance.

Note:

If you execute the procedure described below when no objects have been registered in the Oracle Database, an Oracle error message is displayed during execution of the `sp_rdrp.sql` script.

To delete the objects registered in the Oracle Database being monitored:

1. Set up an environment where the Oracle `sqlplus` command can be executed.

   For details about Oracle environment setup, see your Oracle documentation.

2. Navigate to the following folder that contains the `sp_rdrp.sql` script provided by the PFM - RM for Oracle:

   ```
   /opt/jp1pc/agt1/agent/sql
   ```

3. Execute the `sp_rdrp.sql` script on the Oracle Database being monitored.

   PFM - RM for Oracle deletes monitoring procedures, work tables, and other objects that are required to monitor Oracle from Oracle.

   Example:

   If the monitoring target is Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 or later in a non-CDB configuration

   `sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-of-the-monitoring-target-database* `@sp_rdrp.sql`

   If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration

   `sqlplus` *Oracle-account*`/`*password-for-the-Oracle-account*`@`*net-service-name-of-the-monitoring-target-PDB* `@sp_rdrp.sql`

   Note:

   - `sqlplus` is a command provided by Oracle Corporation.
   - *Oracle-account* is the same Oracle account that was used to register the objects in the database.

- LSC_14_PLAN_TABLE is placed in DBA_RECYCLEBIN and is not deleted completely. If you want to delete LSC_14_PLAN_TABLE completely, execute the `PURGE TABLE LSC_14_PLAN_TABLE;` command.
- Note that if the Oracle account is `sys`, `LSC_14_PLAN_TABLE` is not stored in `DBA_RECYCLEBIN`. Therefore, you do not need to execute the PURGE TABLE `LSC_14_PLAN_TABLE;` command.

4. Reset the value of the `TIMED_STATISTICS` Oracle initialization parameter.

   If the value of the `TIMED_STATISTICS` Oracle initialization parameter has been changed in order to collect records of PFM - RM for Oracle, reset the value, if necessary.

(2) Deleting an Oracle account used in PFM - RM for Oracle

Oracle accounts used in PFM - RM for Oracle are authorized to change the objects of other schemas freely in order to monitor the Oracle Database. For this reason, unnecessary Oracle accounts must be deleted. If the tablespaces that were used by a deleted account are unnecessary, also delete the tablespaces.

(a) Deleting an Oracle account

To delete an Oracle account, issue the `DROP USER` statement in an environment where the `sqlplus` Oracle command can be executed. Before issuing the statement, make sure that your Oracle account has the `DROP USER` system privilege.

To delete an Oracle account:

1. Issue the `DROP USER` statement.

   Example:

   ```
   DROP USER Oracle-account CASCADE;
   ```

   If you add the `CASCADE` option, you can also delete the objects owned by the account.

For details about the `DROP USER` statement, see your Oracle documentation.

(b) Deleting the tablespaces used by a deleted Oracle account

When an Oracle account is deleted, the tablespaces used by the Oracle account become unnecessary. To delete these tablespaces, issue the `DROP TABLESPACE` statement in an environment where the `sqlplus` Oracle command can be executed. Before issuing the statement, make sure that your Oracle account has the `DROP TABLESPACE` system privilege.

To delete tablespaces:

1. Issue the `DROP TABLESPACE` statement.

   For details about the `DROP TABLESPACE` statement, see your Oracle documentation.

2.4.3 Procedure for uninstallation (UNIX)

To uninstall PFM - RM for Oracle:

1. On the host from which you want to uninstall a Performance Management program, log in as a superuser. Alternatively, use the `su` command to become a superuser.

2. On the local host, stop all Performance Management programs and services.

Display the service information and check whether any services are running. Stop all Performance Management programs and services running on the local host. This includes services running on physical and logical hosts. For details about how to display service information and to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

3. Execute the following command to start Hitachi Program Product Installer:

```
/etc/hitachi_x64setup
```

   Hitachi Program Product Installer starts, and displays the initial screen.

4. On the initial screen, enter **D**.
   A list of programs that can be uninstalled appears.

5. Select the Performance Management program you want to uninstall, and enter **D**.
   The selected program is uninstalled. To select the program, position the cursor at the program and press the space bar.

6. When uninstallation has terminated normally, enter **Q**.
   The initial screen of Hitachi Program Product Installer re-appears.

2.5 Changing the system configuration of PFM - RM for Oracle

You may need to change the PFM - RM for Oracle system configuration because of a change in the network configuration or host name of the monitored system.

When you change the PFM - RM for Oracle system configuration, you must also change the settings for PFM - Manager and PFM - Web Console. For details about how to change the Performance Management system configuration, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

2.6 Changing the operation of PFM - RM for Oracle

In some circumstances, such as when changes are made to the way in which collected operation monitoring data is utilized, you may need to change how PFM - RM for Oracle operates.

For details about changing the operation method across the entire Performance Management system, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

2.6.1 Changing the storage location of performance data

Performance data collected by PFM - RM for Oracle is managed in the Store database of the Remote Monitor Store service of PFM - RM for Oracle.

The Store database uses the following folders to manage the collected performance data. These folders can be changed by using the `jpcconf db define` command.

Use the `jpcconf db define` command with -move option if you want to copy the performance data to the new storage location of the Store database.

For details about the `jpcconf db define` command, see the manual *JP1/Performance Management Reference*.

- Save destination folder
- Backup destination folder
- Partial backup destination folder
- Export destination folder
- Import destination folder

(1) Windows

The following table describes the options of the `jpcconf db define` command, including the values that can be specified.

Table 2–26: Options of the command that changes the performance data storage location

Description	Label name	Specifiable values	Default value#
Backup destination folder	`Bd`	1 to 211 bytes absolute path name	*installation-folder*`\agt1\store\`*instance-name*`\backup`
Maximum backup generation number	`Bs`	1 to 9	5
Export destination folder	`dd`	1 to 127 bytes absolute path name	*installation-folder*`\agt1\store\`*instance-name*`\dump`
Import destination folder	`id`	1 to 222 bytes absolute path name	*installation-folder*`\agt1\store\`*instance-name*`\import`

Description	Label name	Specifiable values	Default value#
Save destination folder	Sd	1 to 214 bytes absolute path name	*installation-folder*\agt1\store*instance-name*
Partial backup destination folder	pbd	1 to 214 bytes absolute path name	*installation-folder*\agt1\store*instance-name*\partial

#

For the default save destination for logical host operation, replace *installation-folder* with *environment-folder* \jp1pc.

(2) UNIX

The following table describes the options of the jpcconf db define command, including the values that can be specified.

Table 2–27: Options of the command that changes the performance data storage location

Description	Label name	Specifiable values	Default value#
Backup destination directory	bd	1 to 211 bytes absolute path name	/opt/jp1pc/agt1/store/*instance-name*/backup
Maximum backup generation number	bs	1 to 9	5
Export destination directory	dd	1 to 127 bytes absolute path name	/opt/jp1pc/agt1/store/*instance-name*/dump
Import destination directory	id	1 to 222 bytes absolute path name	/opt/jp1pc/agt1/store/*instance-name*/import
Partial backup destination directory	pbd	1 to 214 bytes absolute path name	/opt/jp1pc/agt1/store/*instance-name*/partial
Save destination directory	sd	1 to 214 bytes absolute path name	/opt/jp1pc/agt1/store/*instance-name*

#

For the default save destination for logical host operation, replace *installation-folder* with *environment-folder* \jp1pc.

2.6.2 Updating a monitoring target

When you update a monitoring target, you first check the instance name. Update a monitoring target on the PFM - RM host. Before you change monitoring target information, check the following table in advance. For details about Oracle monitoring target, see your Oracle documentation.

Table 2–28: Configuration for the monitoring target of PFM - RM for Oracle

Item	Description	Specifiable value	Default value
`Target Host`	Oracle host name for monitoring target. If the Oracle host is a logical host, specify the logical host.	Host names can consist of 1 to 32 alphanumeric characters and hyphen. Note that you cannot specify a (logical) host name beginning with a hyphen. Physical and logical host names must be unique within the system.	Previous value

Use the `jpcconf target list` command to check the monitoring target name. Use the `jpcconf target setup` command to update the monitoring target.

Updating a monitoring target host involves the steps described below. To update multiple monitoring target hosts, repeat the procedure for each monitoring target host.

1. Check the monitoring target name.

   Execute the jpcconf target list command specified with the service key and the instance name that indicate the PFM - RM for Oracle whose monitoring target host you are going to update.

   ```
   jpcconf target list -key RMOracle -inst instance-name
   Targets:
   targethost1
   targethost2
   Groups:
   All
   ```

2. Execute the `jpcconf target setup` command specified with the service key, the instance name, and the monitoring target name that indicate the PFM - RM for Oracle whose monitoring target host you are going to update.

   For example, if you update the monitoring target whose monitoring target name is targethost1, execute the following command:

   ```
   jpcconf target setup -key RMOracle -inst instance-name -target targethost1
   ```

3. Update the monitoring target host of PFM - RM for Oracle.

   Enter the information shown in Table 2-28 in accordance with the command's instructions. The current settings are displayed. To use the displayed value, press the Enter key. When you have finished entering the information, the monitoring target host is updated.

4. Restart the service in the updated instance environment.

   For details about how to start the service, see the chapter on starting and stopping services in the *JP1/Performance Management User's Guide*.

   For details about the commands, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

2.6.3 Updating an instance environment

To update an instance environment, check the name of the instance that you want to update, and change the instance information. The instance information is set from a PFM - RM host.

Before you change an information item, check the following table. For details about Oracle instance information, see your Oracle documentation.

(1) Windows

Table 2–29: PFM - RM for Oracle instance information

Item	Description	Specifiable value	Default
`oracle_sid`	The value of this item can be updated. ID of the monitored Oracle system (same value as the `ORACLE_SID` environment variable).	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	Previous value
`oracle_home`[#1]	The value of this item can be updated. Oracle home folder of Oracle client used by PFM - RM for Oracle (same value as the `ORACLE_HOME` environment variable). [#2]	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	Previous value
`oracle_version`[#1]	The value of this item can be updated. Version number of Oracle Client used by PFM - RM for Oracle. To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, `12` is set.	A two-digit number. • Oracle 11g: 11 • Oracle 12c or later: 12	Previous value
`oracle_user`[#3]	The value of this item can be updated. Account for monitoring Oracle (for details about accounts that can be specified, and the required privileges, see *2.1.4(2) Create an Oracle account to be used in PFM - RM for Oracle*).	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	Previous value
`oracle_passwd`[#4]	The value of this item can be updated. Specify the password for the account specified in `oracle_user`.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	Previous value
`net_service_name`[#1,#5]	The value of this item can be updated. Net service name of the monitored database. For details about the net service name of the monitored database, see the Oracle documentation.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: `, < >`	Previous value
`retry_time`	The value of this item can be updated. The number of seconds for which reconnection is attempted when an	0 to 600 (in seconds).	Previous value

Item	Description	Specifiable value	Default
retry_time	authentication error is output during Oracle connection. If an authentication error occurs after the specified period has passed, the PFM - RM for Oracle service stops. When the value is 0, the PFM - RM for Oracle service stops without retrying to re-establish connection in the event of an authentication error. This item is enabled when startup_always is N. The specification of this item is ignored when startup_always is Y.	0 to 600 (in seconds).	Previous value
log_path	The value of this item can be updated. Specify the absolute path name of the agent log output folder.	A character string of 245 or fewer bytes that does not include the following characters: • Tabs • The following symbols: / : , ; * ? " < > | Notes: • You can specify the path to a folder under the installation folder only when the default folder is set. • You cannot specify the path to a folder that is used as the output destination of another instance.	Previous value
log_size	The value of this item can be updated. Specify the maximum size of each agent log file.	1 to 32 (in kilobytes). 16 or a greater value is recommended.	Previous value
timeout	The value of this item can be updated. The timeout period for Oracle access during a query.	0, or 10 to 3600 (in seconds). When 0 is specified, timeout monitoring is not performed. When a value from 1 to 9 is specified, it is changed to 10 at runtime.	Previous value
sql_option[#6]	The value of this item can be updated. When Y is specified, information about the following items[#5] is not collected for PI_PIDB and PD_PDTS records, and the value specified by 0 or numeric_10 is set.	{ Y | N }	Previous value
numeric_10	The value of this item can be updated. When sql_option is set to Y, the value specified is set for items for which information is not collected. If sql_option is set to N, this specification is disregarded.	0 to 99999. Note that if the value specified exceeds the maximum value for the data format of the set field (32767 for short and 65535 for ushort), the maximum value for the data format is set.[#7]	Previous value
startup_always	The value of this item can be updated. PFM - RM for Oracle may stop due to an Oracle connection error, such as when the monitored Oracle is still starting up when PFM - RM for Oracle starts up.	{ Y | N }	Previous value

Item	Description	Specifiable value	Default
startup_always	If Y is specified, start processing continues even if a connection error occurs. If N is specified, start processing will stop if an error occurs.	{Y|N}	Previous value
localtemp_option#8	The value of this item can be updated. Option for switching the display of the free space of the locally managed temporary tablespace of PD_PDDB, PI_PIDB, PD_PDDF, PI_PIDF, PD_PDTF, PD_PDTS, and PD_PCTS records. If Y is specified, display the size of the free space. If N is specified, display the size of the unallocated space.	{Y|N}	Previous value
nls_lang#9	The value of this item can be updated. Option for specifying the character encoding used for communication between PFM - RM for Oracle and Oracle Database.	Character code set: • In Japanese Windows: {AMERICAN_AMERICA.US7ASCII|AMERICAN_AMERICA.JA16SJISTILDE} • In Simplified-Chinese Windows: {AMERICAN_AMERICA.US7ASCII|AMERICAN_AMERICA.ZHS32GB18030} • Other case: AMERICAN_AMERICA.US7ASCII	Previous value
undospace_option#10	The value of this item can be updated. Option for switching how the value displayed as the free space in the UNDO tablespace of the PD_PDDB, PI_PIDB, PD_PDDF, PI_PIDF, PD_PDTS, and PD_PCTS records is determined. If N is specified, the size of the unallocated space is displayed. If Y is specified, the size of the free space is displayed.	{Y|N}	Previous value

#1

The prerequisite product for PFM - RM for Oracle version 10-50 or earlier was Oracle Client 32-bit. The prerequisite product for version 11-00 or later is Oracle Client 64-bit.

The setting method for version 10-50 or earlier cannot be used to connect to an Oracle Database. Therefore, you must set up PFM - RM for Oracle version 11-00 or later on the assumption that Oracle Client 64-bit is used.

Because instance information settings have been changed in version 11-00 or later as shown in the following table, make sure that the information is set up correctly:

Item	PFM - RM for Oracle	
	10-50 or earlier	11-00 or later
oracle_home	Specify the Oracle home folder for Oracle Client 32-bit.	Specify the Oracle home folder for Oracle Client 64-bit.
oracle_version	Specify the version of Oracle Client 32-bit.	Specify the version of Oracle Client 64-bit.

Item	PFM - RM for Oracle	
	10-50 or earlier	11-00 or later
oracle_version	Specify the version of Oracle Client 32-bit.	To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, 12 is set.
net_service_name	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 32-bit.	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 64-bit.

Notes:

- To upgrade PFM - RM for Oracle 10-50 or earlier to 11-00 or later, instance information is subject to change, and must therefore be updated before starting the PFM - RM for Oracle service.

  Note that Oracle Client 32-bit is no longer needed, and can be uninstalled if it is not used by any product other than PFM - RM for Oracle.
- If you specify ORACLE_HOME for Oracle Client 32-bit and start PFM - RM for Oracle, the KAVL18020-E message appears.

#2

If PFM - RM for Oracle uses the client library of an Oracle Database (when Oracle Database 64-bit is installed on a server with PFM - RM for Oracle installed), specify the Oracle home folder of the Oracle Database.

#3

To change a user, use the following procedure:

1. Delete the objects created by the user you want to change.
2. Register new objects as the new user.

Performance data is not deleted when a user is changed.

For details about how to delete objects, see *2.3.2(1)(c) Deleting the objects registered in the Oracle Database*. For details about how to register objects, see *2.1.4(3)(c) Registering objects in the Oracle Database*.

#4

If the expiration date is set on oracle_passwd, once the password is out of date connections to Oracle fail so that PFM - RM for Oracle cannot collect the performance information. In order to avoid connection errors, perform either of the following procedures before the password is expired:

- Unset the expiration date of the password
- After updating password, execute the jpcconf inst setup command to update oracle_passwd.

Note that the Oracle DEFAULT profile is applied to the Oracle account created by mk_rmus.sql.

#5

Specify in advance the network service (such as tnsnames.ora) of the Oracle Client used by PFM - RM for Oracle.

Configure the network service definition (such as listener.ora) and run the listener process in advance.

When monitoring Oracle Database instances in an Oracle RAC configuration, set up the PFM - RM for Oracle so that it monitors Oracle Database instances on each node. For details about how to set up, see the Oracle documentation.

Note that the location of tnsnames.ora must be:

```
oracle_home\network\admin
```

If tnsnames.ora is located on other folder, PFM - RM for Oracle cannot connect to Oracle.

#6

To obtain each piece of Oracle segment-related information, PFM - RM for Oracle searches Oracle's static data dictionary views `DBA_SEGMENTS`. If a large number of segments (more than hundreds of thousands) exist for Oracle, information collection requires a significant amount of time. As such, when a large number of segments exist, and the information listed in the following table no longer needs to be collected, set the `sql_option` to `Y` during operation.

Table 2–30: Record names and the values specified for numeric_10 (updating instance information)

Record Name	PFM - View name	Value specified for numeric_10
PD_PDTS	Segments	Enabled
	Extents	Enabled
PI_PIDB	DB Files %	Enabled
	Log Files %	Enabled
	NextAlloc Fails	Enabled
	Tablespaces	Enabled
	Rollback Segments	Enabled
	Rollback Segments Trans	Enabled
	Blocks	Enabled
	Segments	Enabled
	Extents	Enabled
	Free Mbytes	Enabled
	Overextended	Enabled
	High Max Extent	Enabled
	Datafiles	Enabled
	Mbytes	Enabled
	Free Extents	Enabled
	Free%	Enabled
	Free Change	Enabled
	Write%	Enabled
	Write/sec	Enabled
	Redo Files	Enabled
	Links	Enabled
	Links Logged On	Enabled
	Links In Tran	Enabled
	Links Open Cursors	Enabled
	Used Change	Enabled
	Used Mbytes	Enabled
	Rollback Segments Hit%	Enabled

Record Name	PFM - View name	Value specified for numeric_10
PI_PIDB	Sort Segments	Enabled
	Sorting Users	Enabled
	Physical Blocks Read	Always set to 0 because it is a delta item.
	Physical Blocks Written	Always set to 0 because it is a delta item.
	Physical Reads	Always set to 0 because it is a delta item.
	Physical Writes	Always set to 0 because it is a delta item.

#7

If the field format for each record is float or double, since the data is a floating-point number, it may be rounded depending on the specified value.

Example:

When numeric_10 is set to 32767, it may be displayed as 32760.

#8

When localtemp_option is set to Y, collect free space of the locally managed temporary tablespace and information about the extents from v$sort_segment or v$temp_extent_pool of the dynamic performance view. The displayed values of the size of free space are calculated from the size of the used space.

When localtemp_option is set to N, collect free space of the locally managed temporary tablespace and information about the extents from v$temp_space_header of the dynamic performance view. The displayed values of the size of free space are the size of the unallocated space. Since the allocated space is not freed until the temporary tablespace is reconstructed or recreated, the displayed values of free space do not increase until the space is freed.

When issuing query to v$temp_extent_pool view, the Oracle instance goes to sleep. Since this may have effect on the performance of the Oracle instance, you need adequate consideration before localtemp_option is set to Y. For details, see your Oracle documentation.

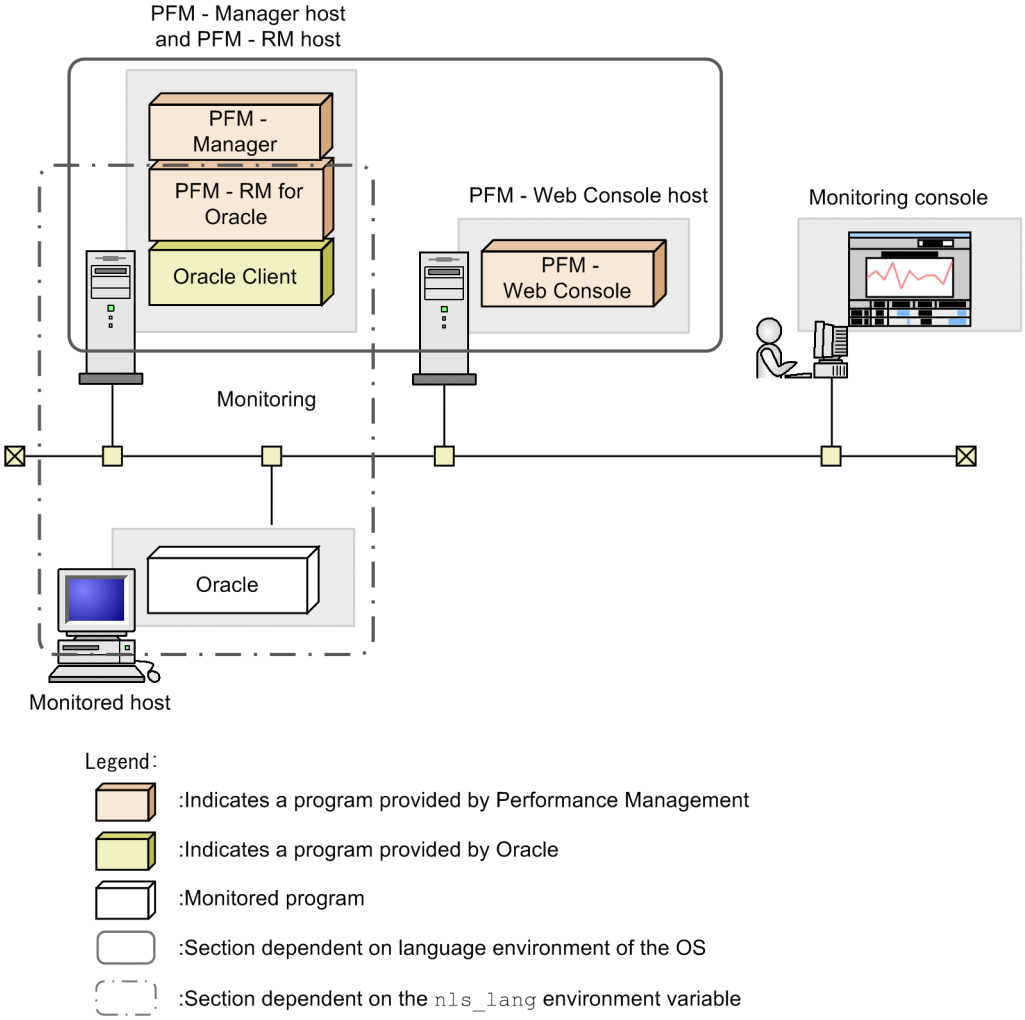
The following records use v$temp_extent_pool view:

- Data File (PD_PDDF)
- Data File Interval (PI_PIDF)

#9

The following figure shows the relationship among data, language environment of the OS, and instance information handled by PFM - RM for Oracle.

Figure 2–11: Relationship between data and the setting values



PFM - RM for Oracle can collect performance data in SJIS (in Japanese Windows) and GB18030 (in Simplified-Chinese Windows) format as well as 7-bit ASCII format. You must specify `nls_lang` variable for the language environment of the OS, `NLS_CHARACTERSET` of the Oracle.

OS language of PFM - RM for Oracle installed	NLS_CHARACTERSET of the monitored Oracle (Database character set)	nls_lang instance information (this item)
Japanese	JA16SJISTILDE	AMERICAN_AMERICA.JA16SJISTILDE or AMERICAN_AMERICA.US7ASCII#
	JA16SJIS	
	other	AMERICAN_AMERICA.US7ASCII#
Simplified-Chinese	ZHS16GBK	AMERICAN_AMERICA.ZHS32GB18030 or AMERICAN_AMERICA.US7ASCII#
	AL32UTF8	
	other	AMERICAN_AMERICA.US7ASCII#
other language	notdependent	AMERICAN_AMERICA.US7ASCII#

#

Performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

For any other combination, performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

When you specify an invalid character code set for the `nls_lang` instance information, the message `KAVL18302-W` with `errcode 12705` is output, and the connection with Oracle will fail.

In the following cases as well, unreadable characters might occur in the performance data:

1. The Oracle column length is exceeded.

   If you store data that exceeds the Oracle column length, the last character might become unreadable. If you use PFM - RM for Oracle to collect data in Oracle and that data contains unreadable characters, the last character of the performance data will be unreadable.

2. The field size of PFM - RM for Oracle is exceeded.

   PFM - RM for Oracle collects performance data of the record field size from Oracle. Therefore, if Oracle contains data that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name	Filed size (unit: bytes)
`Parameter Values(PD_PDP)`	`Value`	512
`SQL Text(PD_PDSQ)`	`Explain Plan`	30,000
	`SQL Text`	30,000

#10

When `undospace_option` is set to `N`, the size of the unallocated space is collected as the amount of free space in the UNDO tablespace. Space in the UNDO tablespace that becomes available because its retention period has expired is treated as allocated space until it is released.

When `undospace_option` is set to `Y`, the size of the free space is collected as the amount of free space in the UNDO tablespace. Space of the UNDO tablespace that becomes available because its retention period has expired is included in the size of the free space.

The following table shows the fields whose values change depending on the specification of the `undospace_option`:

Record name	Field name
`Data File(PD_PDDF)`	`Free %`
	`Free Mbytes`
	`Used Mbytes`
`Data File Interval (PI_PIDF)`	`Free %`
	`Free Change`
	`Free Mbytes`
	`Used Change`
	`Used Mbytes`
`Database(PD_PDDB)`	`Free %`
	`Free Mbytes`
	`Used Mbytes`
`Database Interval (PI_PIDB)`	`Free %`
	`Free Change`
	`Free Mbytes`
	`Used Change`

Record name	Field name
Database Interval (PI_PIDB)	Used Mbytes
Tablespace (PD_PDTS)	Free %
	Free Mbytes
	Used Mbytes
	Max Extend Free %
	Max Extend Free Mbytes
Collection Tablespace 2 (PD_PCTS)	Free Mbytes

Use the `jpcconf inst list` command to check the instance name. To update an instance environment, use the `jpcconf inst setup` command.

Updating an instance environment involves the steps described below. To update multiple instance environments, repeat the procedure for each instance environment.

To update an instance environment:

1. Find the instance name.
   Execute the `jpcconf inst list` command specified with the service key that indicates PFM - RM for Oracle.

   ```
   jpcconf inst list -key RMOracle
   ```

   If the specified instance name is `SDC`, the command displays `SDC`.

2. If the PFM - RM for Oracle service is active in the instance environment that is to be updated, stop the service.
   For details about stopping services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.
   If the service is still active in the instance environment that is to be updated when you execute the `jpcconf inst setup` command, a confirmation message is displayed to enable you to stop the service. If you stop the service, update processing resumes; if you do not stop the service, update processing is canceled.

3. Execute the `jpcconf inst setup` command specified with the service key that indicates PFM - RM for Oracle and the instance name.
   For example, if you are updating the instance environment for the PFM - RM for Oracle with instance name `SDC`, execute the following command:

   ```
   jpcconf inst setup -key RMOracle -inst SDC
   ```

4. Update the instance information for Oracle.
   Enter the information shown in Table 2-29 in accordance with the command's instructions. The current settings are displayed (except for the value of `oracle_passwd`). To use the displayed value, press the **Enter** key. When you have finished entering information, the instance environment is updated.

5. Restart the service in the updated instance environment.
   For details about starting services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

For details about commands, see the chapter on commands in the manual *JP1/Performance Management Reference*.

(2) UNIX

Table 2–31: PFM - RM for Oracle instance information

Item	Description	Specifiable value	Default
oracle_sid	The value of this item can be updated. ID of the monitored Oracle system (same value as the ORACLE_SID environment variable).	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Previous value
oracle_home[#1]	The value of this item can be updated. The value of this item can be updated. Oracle home folder of Oracle client used by PFM - RM for Oracle (same value as the ORACLE_HOME environment variable). [#1]	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Previous value
oracle_version[#1]	The value of this item can be updated. Version number of Oracle Client used by PFM - RM for Oracle. To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, 12 is set.	A two-digit number. • Oracle 11g: 11 • Oracle 12c or later: 12	Previous value
oracle_user[#3]	The value of this item can be updated. Account for monitoring Oracle (for details about accounts that can be specified, and the required privileges, see *2.2.4(3) Create an Oracle account to be used in PFM - RM for Oracle*).[#2]	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Previous value
oracle_passwd[#4]	The value of this item can be updated. Specify the password for the account specified in oracle_user.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Previous value
net_service_name[#1,#5]	The value of this item can be updated. Net service name of the monitored database. For details about the net service name of the monitored database, see the Oracle documentation.	A character string of 255 or fewer bytes that does not include the following characters: • Spaces • Tabs • The following symbols: , < >	Previous value
log_path[#6]	The value of this item can be updated. Specify the absolute path name of the agent log output folder.	A character string of 245 or fewer bytes that does not include the following characters: • Tabs • The following symbols: / : , ; * ? " < > |	Previous value

Item	Description	Specifiable value	Default
log_path[#6]	The value of this item can be updated. Specify the absolute path name of the agent log output folder.	Notes: • You can specify the path to a folder under the installation folder only when the default folder is set. • You cannot specify the path to a folder that is used as the output destination of another instance.	Previous value
log_size	The value of this item can be updated. Specify the maximum size of each agent log file.	1 to 32 (in kilobytes). 16 or a greater value is recommended.	Previous value
timeout	The value of this item can be updated. The timeout period for Oracle access during a query.	0, or 10 to 3600 (in seconds). When 0 is specified, timeout monitoring is not performed. When a value from 1 to 9 is specified, it is changed to 10 at runtime.	Previous value
sql_option[#7]	The value of this item can be updated. When Y is specified, information about the following items[#6] is not collected for PI_PIDB and PD_PDTS records, and the value specified by 0 or numeric_10 is set.	{ Y | N }	Previous value
numeric_10	The value of this item can be updated. When sql_option is set to Y, the value specified is set for items for which information is not collected. If sql_option is set to N, this specification is disregarded.	0 to 99999. Note that if the value specified exceeds the maximum value for the data format of the set field (32767 for short and 65535 for ushort), the maximum value for the data format is set.[#7]	Previous value
startup_always	The value of this item can be updated. PFM - RM for Oracle may stop due to an Oracle connection error, such as when the monitored Oracle is still starting up when PFM - RM for Oracle starts up. If Y is specified, start processing continues even if a connection error occurs. If N is specified, start processing will stop if an error occurs.	{ Y | N }	Previous value
localtemp_option[#9]	The value of this item can be updated. Option for switching the display of the free space of the locally managed temporary tablespace of PD_PDDB, PI_PIDB, PD_PDDF, PI_PIDF, PD_PDTF, PD_PDTS, and PD_PCTS records. If Y is specified, display the size of the free space. If N is specified, display the size of the unallocated space.	{ Y | N }	Previous value
nls_lang[#10]	The value of this item can be updated. Option for specifying the character encoding used for communication between PFM - RM for Oracle and Oracle Database.	Character code set: According to LANG of the OS when at the start time of the PFM - RM for Oracle. • UTF-8 (Japanese or Simplified-Chinese):	Previous value

Item	Description	Specifiable value	Default
nls_lang[#10]	The value of this item can be updated. Option for specifying the character encoding used for communication between PFM - RM for Oracle and Oracle Database.	{AMERICAN_AMERICA.US7ASCII|AMERICAN_AMERICA.AL32UTF8} • GB18030: {AMERICAN_AMERICA.US7ASCII|AMERICAN_AMERICA.ZHS32GB18030} • Other case: AMERICAN_AMERICA.US7ASCII	Previous value
undospace_option[#11]	The value of this item can be updated. Option for switching how the value displayed as the free space in the UNDO tablespace of the PD_PDDB, PI_PIDB, PD_PDDF, PI_PIDF, PD_PDTS, and PD_PCTS records is determined. If N is specified, the size of the unallocated space is displayed. If Y is specified, the size of the free space is displayed.	{Y|N}	Previous value

#1

The prerequisite product for PFM - RM for Oracle version 10-50 or earlier was Oracle Client 32-bit. The prerequisite product for version 11-00 or later is Oracle Client 64-bit.

The setting method for version 10-50 or earlier cannot be used to connect to an Oracle Database. Therefore, you must set up PFM - RM for Oracle version 11-00 or later on the assumption that Oracle Client 64-bit is used.

Because instance information settings have been changed in version 11-00 or later as shown in the following table, make sure that the information is set up correctly:

Item	PFM - RM for Oracle	
	10-50 or earlier	11-00 or later
oracle_home	Specify the Oracle home folder for Oracle Client 32-bit.	Specify the Oracle home folder for Oracle Client 64-bit.
oracle_version	Specify the version of Oracle Client 32-bit.	Specify the version of Oracle Client 64-bit. To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, 12 is set.
net_service_name	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 32-bit.	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 64-bit.

Notes:

- To upgrade PFM - RM for Oracle 10-50 or earlier to 11-00 or later, instance information is subject to change, and must therefore be updated before starting the PFM - RM for Oracle service.

  Note that Oracle Client 32-bit is no longer needed, and can be uninstalled if it is not used by any product other than PFM - RM for Oracle.

- If you specify ORACLE_HOME for Oracle Client 32-bit and start PFM - RM for Oracle, the KAVL18011-E and KAVL18021-E message appear.

#2

If PFM - RM for Oracle uses the client library of an Oracle Database in which Oracle Client 64-bit has been installed, specify the Oracle home folder of the Oracle Database.

#3

To change a user, use the following procedure:

1. Delete the objects created by the user you want to change.
2. Register new objects as the new user.

Performance data is not deleted when a user is changed.

For details about how to delete objects, see *2.4.2(1)(c) Deleting the objects registered in the Oracle Database*. For details about how to register objects, see *2.2.4(4)(c) Registering objects in the Oracle Database*.

#4

If the expiration date is set on `oracle_passwd`, once the password is out of date connections to Oracle fail so that PFM - RM for Oracle cannot collect the performance information. In order to avoid connection errors, perform either of the following procedures before the password is expired:

- Unset the expiration date of the password
- After updating password, execute the `jpcconf inst setup` command to update `oracle_passwd`.

Note that the Oracle DEFAULT profile is applied to the Oracle account created by `mk_rmus.sql`.

#5

Specify in advance the network service (such as tnsnames.ora) of the Oracle Client used by PFM - RM for Oracle.

Configure the network service definition (such as listener.ora) and run the listener process in advance.

When monitoring Oracle Database instances in an Oracle RAC configuration, set up the PFM - RM for Oracle so that it monitors Oracle Database instances on each node. For details about how to set up, see the Oracle documentation.

Note that the location of tnsnames.ora must be:

```
oracle_home/network/admin
```

If tnsnames.ora is located on other directory, must therefore set to TNS_ADMIN environment variable in starting user of PFM - RM for Oracle before starting the PFM - RM for Oracle service.

For details about the TNS_ADMIN environment variable, see the Oracle documentation.

#6

Manually save the old path information in a file as history data, since the information is not saved automatically. You may need to acquire the agent log information from the old directory if a problem occurs.

#7

To obtain each piece of Oracle segment-related information, PFM - RM for Oracle searches Oracle's static data dictionary views `DBA_SEGMENTS`. If a large number of segments (more than hundreds of thousands) exist for Oracle, information collection requires a significant amount of time. As such, when a large number of segments exist, and the information listed in the following table no longer needs to be collected, set the `sql_option` to `Y` during operation.

Table 2–32: Record names and the values specified for numeric_10 (updating instance information)

Record Name	PFM - View name	Value specified for numeric_10
PD_PDTS	Segments	Enabled
	Extents	Enabled

Record Name	PFM - View name	Value specified for numeric_10
PI_PIDB	DB Files %	Enabled
	Log Files %	Enabled
	NextAlloc Fails	Enabled
	Tablespaces	Enabled
	Rollback Segments	Enabled
	Rollback Segments Trans	Enabled
	Blocks	Enabled
	Segments	Enabled
	Extents	Enabled
	Free Mbytes	Enabled
	Overextended	Enabled
	High Max Extent	Enabled
	Datafiles	Enabled
	Mbytes	Enabled
	Free Extents	Enabled
	Free%	Enabled
	Free Change	Enabled
	Write%	Enabled
	Write/sec	Enabled
	Redo Files	Enabled
	Links	Enabled
	Links Logged On	Enabled
	Links In Tran	Enabled
	Links Open Cursors	Enabled
	Used Change	Enabled
	Used Mbytes	Enabled
	Rollback Segments Hit%	Enabled
	Sort Segments	Enabled
	Sorting Users	Enabled
	Physical Blocks Read	Always set to 0 because it is a delta item.
	Physical Blocks Written	Always set to 0 because it is a delta item.
	Physical Reads	Always set to 0 because it is a delta item.
	Physical Writes	Always set to 0 because it is a delta item.

#8

If the field format for each record is `float` or `double`, since the data is a floating-point number, it may be rounded depending on the specified value.

Example:

When `numeric_10` is set to `32767`, it may be displayed as `32760`.

#9

When `localtemp_option` is set to `Y`, collect free space of the locally managed temporary tablespace and information about the extents from v$sort_segment or v$temp_extent_pool of the dynamic performance view. The displayed values of the size of free space are calculated from the size of the used space.

When `localtemp_option` is set to `N`, collect free space of the locally managed temporary tablespace and information about the extents from v$temp_space_header of the dynamic performance view. The displayed values of the size of free space are the size of the unallocated space. Since the allocated space is not freed until the temporary tablespace is reconstructed or recreated, the displayed values of free space do not increase until the space is freed.

When issuing query to v$temp_extent_pool view, the Oracle instance goes to sleep. Since this may have effect on the performance of the Oracle instance, you need adequate consideration before `localtemp_option` is set to `Y`. For details, see your Oracle documentation.

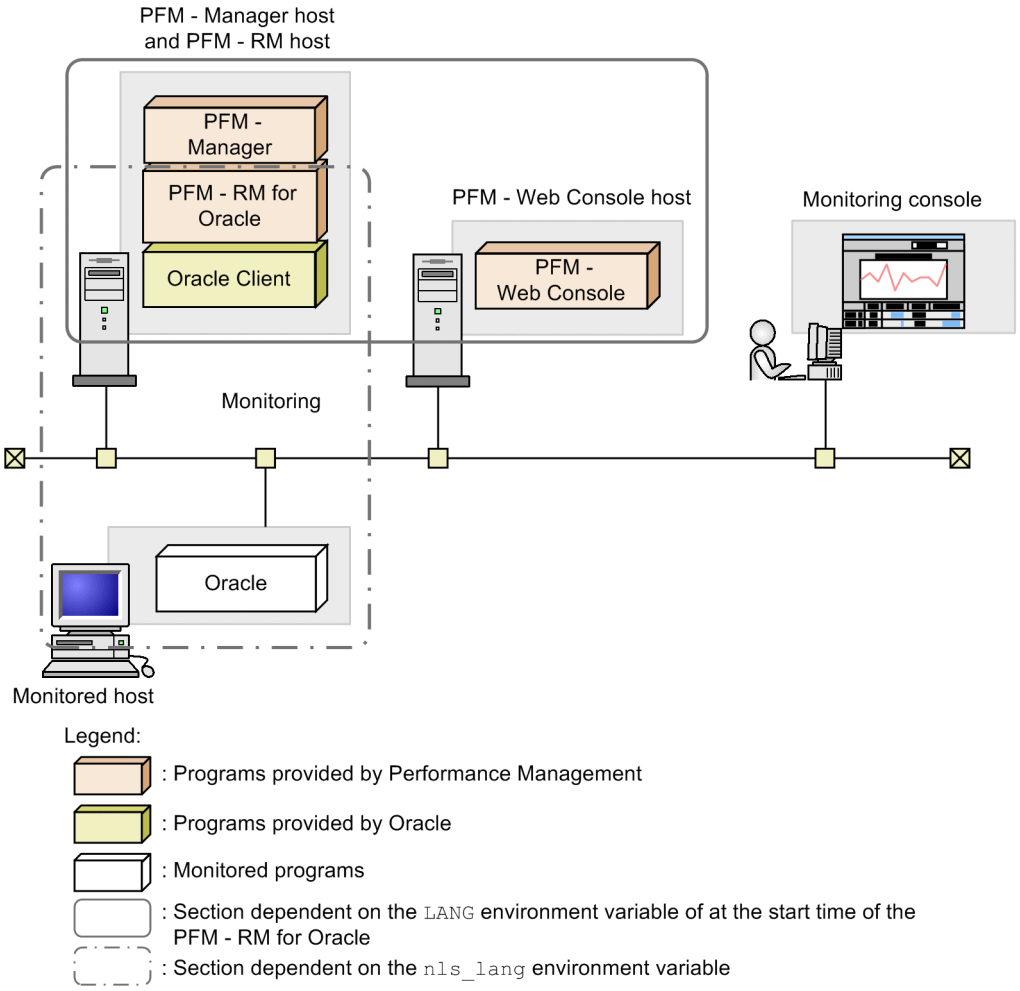
The following records use `v$temp_extent_pool` view:

- Data File (PD_PDDF)
- Data File Interval (PI_PIDF)

#10

The following figure shows the relationship among data, `LANG` environment variable of at the start time of the PFM - RM for Oracle, and instance information handled by PFM - RM for Oracle.

Figure 2–12: Relationship between data and the setting values



PFM - RM for Oracle can collect performance data in UTF-8 format (for Japanese and Chinese environment) and GB18030 format (for Chinese environment) as well as 7-bit ASCII format.

The following table lists the values that can be set in `nls_lang` instance information for the `LANG` environment variable at the start time of PFM - RM for Oracle:

LANG environment variable of at the start time of PFM - RM for Oracle	nls_lang instance information (this item)
`ja_JP.UTF-8`, `ja_JP.utf-8`, `zh_CN.UTF-8`, `zh_CN.utf8`	`AMERICAN_AMERICA.AL32UTF8` or `AMERICAN_AMERICA.US7ASCII`#
`zh_CN.gb18030`	`AMERICAN_AMERICA.ZHS32GB18030` or `AMERICAN_AMERICA.US7ASCII`#
Other than the above	`AMERICAN_AMERICA.US7ASCII`#

#

Performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

For any other combination, performance data is collected within the scope of 7-bit ASCII characters, likely resulting in unreadable characters.

For details about how to set the `LANG` environment variable of the OS, see *2.2.4(1) Set the LANG environment variable*.

When you specify an invalid character code set for the nls_lang instance information, the message KAVL18302-W with errcode 12705 is output, and connection with Oracle will fail.

In the following cases as well, unreadable or lack of characters might occur in the performance data:

1. The Oracle column length is exceeded.

   If you store data that exceeds the Oracle column length, the last character might become unreadable. If you use PFM - RM for Oracle to collect data in Oracle that contains unreadable characters, the last character of the performance data will be unreadable.

2. The field size of PFM - RM for Oracle is exceeded.

   PFM - RM for Oracle collects performance data of the record field size from Oracle. Therefore, if Oracle contains data that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name	Field size (Unit: bytes)
Parameter Values(PD_PDP)	Value	512
SQL Text(PD_PDSQ)	Explain Plan	30000
	SQL Text	30000

3. Unreadable or lack of characters in different between database character set of the Oracle and nls_lang instance variable of the PFM - RM for Oracle.

   A data of 2 bytes on the basis of Oracle may be collected at 3 bytes when you set AMERICAN_AMERICA.AL32UTF8 in nls_lang and a database character set for the monitoring is not UTF-8. Therefore, if performance data takes from ORACLE that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name	Field size (Unit: bytes)
Collection Tablespace 2(PD_PCTS)	Tablespace Name	30
Collection Instance 2 (PD_PCI)	Recovery File Dest	513
Data File(PD_PDDF)	File Name	513
	Tablespace Name	30
Data File Interval(PI_PIDF)	File Name	513
	Tablespace Name	30
Database(PD_PDDB)	DB Name	9
Database Interval(PI_PIDB)	DB Name	9
Instance(PD_PDI)	Host	64
Lock Waiters(PD_PDLW)	Holding User	30
	Waiting User	30
Minimum Database Interval 2(PI_PMDB)	DB Name	9
Minimum Data File Interval 2(PI_PMDF)	File Name	513
Minimum Tablespace Interval 2(PI_PMTS)	Tablespace Name	30
Open Cursor(PD_PDOC)	Program	48
	SQL Text	60

Record name	Field name	Field size (Unit: bytes)
Parameter Values(PD_PDP)	Value	512
Session Detail(PD_PDS)	Machine	64
	Module	48
	OS User	30
	Program	64
	Schema Name	30
	User	30
Session I/O Interval(PI_PIIO)	User	30
Session Statistics Summary(PD_PDS2)	Program	48
	User	30
SQL Text(PD_PDSQ)	Explain Plan	30,000
	SQL Text	30,000
Tablespace Fragmentation(PD_PDTF)	Tablespace Name	30
Tablespace Interval(PI_PITS)	Tablespace Name	30
Tablespace(PD_PDTS)	Tablespace Name	30
Transaction(PD_PDTR)	User	30
Transaction Lock(PD_PDTL)	Object Name	30
	Owner	30
	User	30

#11

When undospace_option is set to N, the size of the unallocated space is collected as the amount of free space in the UNDO tablespace. Space in the UNDO tablespace that becomes available because its retention period has expired is treated as allocated space until it is released.

When undospace_option is set to Y, the size of the free space is collected as the amount of free space in the UNDO tablespace. Space of the UNDO tablespace that becomes available because its retention period has expired is included in the size of the free space.

The following table shows the fields whose values change depending on the specification of the undospace_option:

Record name	Field name
Data File(PD_PDDF)	Free %
	Free Mbytes
	Used Mbytes
Data File Interval (PI_PIDF)	Free %
	Free Change
	Free Mbytes
	Used Change

Record name	Field name
Data File Interval (PI_PIDF)	Used Mbytes
Database (PD_PDDB)	Free %
	Free Mbytes
	Used Mbytes
Database Interval (PI_PIDB)	Free %
	Free Change
	Free Mbytes
	Used Change
	Used Mbytes
Tablespace (PD_PDTS)	Free %
	Free Mbytes
	Used Mbytes
	Max Extend Free %
	Max Extend Free Mbytes
Collection Tablespace 2 (PD_PCTS)	Free Mbytes

Use the `jpcconf inst list` command to check the instance name. To update an instance environment, use the `jpcconf inst setup` command.

Updating an instance environment involves the steps described below. To update multiple instance environments, repeat the procedure for each instance environment.

To update an instance environment:

1. Find the instance name.
   Execute the `jpcconf inst list` command specified with the service key that indicates PFM - RM for Oracle.

   ```
   jpcconf inst list -key RMOracle
   ```

   If the specified instance name is `SDC`, the command displays `SDC`.

2. If the PFM - RM for Oracle service is active in the instance environment that is to be updated, stop the service.
   For details about stopping services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.
   If the service is still active in the instance environment that is to be updated when you execute the `jpcconf inst setup` command, a confirmation message is displayed to enable you to stop the service. If you stop the service, update processing resumes; if you do not stop the service, update processing is canceled.

3. Execute the `jpcconf inst setup` command specified with the service key that indicates PFM - RM for Oracle and the instance name.
   For example, if you are updating the instance environment for the PFM - RM for Oracle with instance name `SDC`, execute the following command:

```
jpcconf inst setup -key RMOracle -inst SDC
```

4. Update the instance information for Oracle.

   Enter the information shown in Table 2-31 in accordance with the command's instructions. The current settings are displayed (except for the value of `oracle_passwd`). To use the displayed value, press the **Enter** key. When you have finished entering information, the instance environment is updated.

5. Restart the service in the updated instance environment.

   For details about starting services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

For details about commands, see the chapter on commands in the manual *JP1/Performance Management Reference*.

2.6.4 Checking how monitoring targets are configured

This subsection explains how to list the configured monitoring targets and check how they are configured.

(1) List the configured monitoring targets

You can list the monitoring targets per a remote agent or a group agent.

The following procedure describes how to list the monitoring targets:

1. Log in to the PFM - RM host.
2. Execute the `jpcconf target list` command.

(2) Check the configurations of monitoring targets

You can check the configurations per a remote agent or a group agent.

The following procedure describes how to check the configurations of monitoring targets.

1. Log in to the PFM - RM host.
2. Execute the `jpcconf target display` command.

2.6.5 Cancellation facility for Oracle access during record collection

The maximum time for accessing Oracle can be set as a timeout value, for the time it takes to collect 1 record.

When record data is collected while Oracle and the machine are experiencing heavy load, it may take a significant amount of time to perform record collection, depending on the amount of data collected. In this case, PFM - RM for Oracle requests may impact Oracle operation. As such, a timeout value can be set to cancel requests from PFM - RM for Oracle to Oracle, to prevent impact on Oracle operation.

Record collection is performed in the following order for each record:

1. Oracle is accessed
2. Data is written to the Store database

However, when a timeout value is set, and a timeout occurs during Oracle access, collection for that record is canceled.

This facility is implemented using the `OCIBreak` function of the Oracle OCI (Oracle Call Interface).

The timeout value can be set as follows:

- During instance environment setup by using the `jpcconf inst setup` command
- By changing the `TIMEOUT` property for the Remote Monitor Collector service, in the PFM - Web Console GUI

The values that can be set are `0`, or anything from 10 to 3,600 (in seconds). If `0` is specified, this facility is not used. Out-of-range values will be disregarded. `0` is set as the default.

The following table lists the values that can be entered as timeout values, for each setting method.

Table 2–33: Possible timeout values

Setting method	Value input				
	-1 or less	0	1 to 9	10 to 3,600	3,601 or more
Setting/update from the `jpcconf inst setup` command	Input error (cannot be input)	Yes	Yes, but replaced on restart	Yes	Input error (cannot be input)
Change from PFM - Web Console	Yes, but not updated	Yes	Yes, but not updated	Yes	Yes, but not updated

Legend:

Yes: Can be input.

Yes, but replaced on restart: Can be input, but replaced with `10` when PFM - RM for Oracle is restarted. A `KAVL18630-W` message is output to the common message log.

Yes, but not updated: Can be input, but cannot be updated. A `KAVL18630-W` message is output to the common message log.

> **Important**
>
> Set the timeout value according to the time needed to collect records during heavy load (peak time).

For details about the timeout values set by the `jpcconf inst setup` command, see *2.1.4(3) Set up an instance environment*.

Note that the following records are not subject to cancellation:

- Instance Availability (`PD_PDIA`)

When a timeout occurs, the following message is output to the common log (`agtoinf0x.log`) of the agent log.

```
KAVL18636-I
The cancellation of the record collection (record-name) by the time-out was
accepted.
```

Note that when records are not collected due to cancellation, a `KAVL18401-W` message is output to the common message log.

When a collection of multiple records, such as historical data, is performed at the same time, even if a timeout occurs for a single record, collection of other records is not performed.

> **Important**
>
> Since PFM - RM for Oracle uses the OCI (Oracle Call Interface), the time required for actual cancellation depends on the processing time for `OCIBreak()`. As such, cancellation may not happen instantly.

In the following cases, a record collection is not canceled even when a cancellation request occurs due to a timeout:

- When a timeout occurs while a collection sequence is being moved to be written to the Store database.
- Cancellation occurs due to timeout while Oracle access is terminating, in which case the `KAVL18636-I` message is output to the log file, but record collection is performed normally.

2.7 Backup and restoration

This section explains how to back up and restore PFM - RM for Oracle.

In preparation for the system failure due to errors, back up the configuration files. When you change the system configuration (such as setting up PFM - RM for Oracle), back up the configuration files.

For details about how to back up and restore the whole Performance Management system, see the chapter on backup and restoration in the *JP1/Performance Management User's Guide*.

2.7.1 Backup

When you back up the configuration files, you back up those files in any measure (such as copying the files). When you back up those configuration files, make sure that the PFM - RM for Oracle service is inactive before you back up the files.

Important

When you back up the configuration files, record the product version number of PFM - RM for Oracle. For details about the product version number, see the *Release Notes*.

(1) Windows

Table below shows the backup target files for PFM - RM for Oracle (Windows):

For details about other files, see the section presenting a list of files to be backed up for PFM - RM (in Windows) in the JP1/Performance Management User's Guide.

Table 2–34: Backup target files for PFM - RM for Oracle (for a Windows physical host)

File name	Description
Installation-folder\agt1\agent*.ini files	Configuration file for Remote Monitor Collector service
Installation-folder\agt1\agent*instance-name*#*.ini files	
Installation-folder\agt1\agent*instance-name*#\groups*.ini files	
Installation-folder\agt1\agent*instance-name*#\targets*.ini files	
Installation-folder\agt1\store*.ini files	Configuration file for Remote Monitor Store service
Installation-folder\agt1\store*instance-name*#*.ini files	

#

These folders are used in instance environment operations. For an instance configuration, the number of folders that the system creates is equal to the number of instances.

Table 2–35: Backup target files for PFM - RM for Oracle (for a Windows logical host)

File name	Description
Installation-folder\agt1\agent*.ini files	Configuration file for Remote Monitor Collector service
Environment-folder#2\jp1pc\agt1\agent*instance-name*#1*.ini files	

File name	Description
Environment-folder[#2]\jp1pc\agt1\agent*instance-name*[#1]\groups*.ini files	Configuration file for Remote Monitor Collector service
Environment-folder[#2]\jp1pc\agt1\agent*instance-name*[#1]\targets*.ini files	
Installation-folder\agt1\store*.ini files	Configuration file for Remote Monitor Store service
Environment-folder[#2]\jp1pc\agt1\store*instance-name*[#1]*.ini files	

#1

These folders are used in instance environment operations. For an instance configuration, the number of folders that the system creates is equal to the number of instances.

#2

Environment-folder is the folder that is created on the shared disk when setting up the logical host.

(2) UNIX

Table below shows the backup target files for PFM - RM for Oracle (UNIX):

For details about other files, see the section presenting a list of files to be backed up for PFM - RM (in UNIX) in the *JP1/Performance Management User's Guide*.

Table 2–36: Backup target files for PFM - RM for Oracle (for a UNIX physical host)

File name	Description
/opt/jp1pc/agt1/agent/*.ini files	Configuration file for Remote Monitor Collector service
/opt/jp1pc/agt1/agent/*instance-name*[#]/*.ini files	
/opt/jp1pc/agt1/agent/*instance-name*[#]/groups/*.ini files	
/opt/jp1pc/agt1/agent/*instance-name*[#]/targets/*.ini files	
/opt/jp1pc/agt1/store/*.ini files	Configuration file for Remote Monitor Store service
/opt/jp1pc/agt1/store/*instance-name*[#]/*.ini files	

#

These directories are used in instance environment operations. For an instance configuration, the number of directories the system creates is equal to the number of instances.

Table 2–37: Backup target files for PFM - RM for Oracle (for a UNIX logical host)

File name	Description
/opt/jp1pc/agt1/agent/*.ini files	Configuration file for Remote Monitor Collector service
/*Environment-directory*[#2]/jp1pc/agt1/agent/*instance-name*[#1]/*.ini files	
/*Environment-directory*[#2]/jp1pc/agt1/agent/*instance-name*[#1]/groups/*.ini files	
/*Environment-directory*[#2]/jp1pc/agt1/agent/*instance-name*[#1]/targets/*.ini files	
/opt/jp1pc/agt1/store/*.ini files	Configuration file for Remote Monitor Store service
/*Environment-directory*[#2]/jp1pc/agt1/store/*instance-name*[#1]/*.ini files	

#1

These directories are used in instance environment operations. For an instance configuration, the number of directories the system creates is equal to the number of instances.

#2

Environment-directory is the directory that is created on the shared disk when setting up the logical host.

2.7.2 Restoration

Make sure that the following prerequisite conditions are met before you restore the configuration information of PFM - RM for Oracle. After confirming that the conditions have been met, copy the backup files to the original location, and overwrite the existing configuration files on the host with the backup configuration files.

Prerequisites:

- PFM - RM for Oracle has been already installed.
- The PFM - RM for Oracle service is inactive.
- The system configuration is the same as when you created the backup.
- The backup host name and the restoration host name match on each host.
- The PFM product configuration information in the backup environment matches that on the restoration target.

> **Important**
>
> When you restore the configuration files for PFM - RM for Oracle, the product version number of the PFM - RM for Oracle in the backup environment must be the same as that of the PFM - RM for Oracle in the restoration target environment. For details about the product version number, see the *Release Notes*.

2.8 Online manuals

The standard manual supplied medium accompanying the Performance Management program product contains a manual that you can copy to the host on which PFM - Web Console is installed and then view in a Web browser. Make sure that you copy the manual to the executing and standby nodes when PFM - Web Console runs in a cluster system.

2.8.1 Setting procedure

(1) See the manual from the help menu bar of PFM - Web Console

1. Register PFM - RM with PFM - Web Console, following the PFM - Web Console setup procedure (Follow the procedure to register an additional PFM - RM).

2. On the host on which PFM - Web Console is installed, create a directory to copy the manual to.
   - Windows: *Web-Console-installation-folder*\doc*language-cord**help-ID-of-PFM - RM-for-Oracle*
   - UNIX: /opt/jp1pcwebcon/doc/*language-cord*/*help-ID-of-PFM - RM-for-Oracle*

   For details about the help ID of PFM - RM for Oracle, see *C. List of Identifiers*.

3. From the manual supplied medium, copy all the manual files to the root of the directory you created.

   HTML manual:

   Windows: all the htm files and FIGURE folder from the *applicable-drive* \MAN\3021*material number* (such as 03004A0D)

   UNIX: all the htm files and FIGURE directory from /*mount-point-directory-for-the-supplied-medium*/MAN/3021/*material number* (such as 03004A0D)

   PDF manual:

   Windows: the PDF file from *applicable-drive*\MAN\3021*material number* (such as 03004A0D)

   UNIX: the PDF file from /*mount-point-directory-for-the-supplied-medium*/MAN/3021/*material number* (such as 03004A0D)

   Make sure you copy the index.htm files (for the HTML manual) or the PDF files (for the PDF manual) to the root of the created directory.

4. Restart PFM - Web Console.

(2) See the manual from the hard disk

Execute the setup.exe command on supplied medium to install the manual, or copy htm files, PDF files, and GIF files to any folders or directories. For HTML manual, the folder or directory organization must be:

```
html (storage folder or directory of the htm files and the PDF files)
 └ FIGURE (storage folder or directory of GIF files)
```

2.8.2 Viewing the manual

To view the manual:

1. In the menu bar of the PFM - Web Console main window, click Help. A help selection window appears.

2. Click the manual name, or click [PDF] after the manual name.
   Clicking the manual name displays the manual in HTML format. Clicking [PDF] displays the manual in PDF format.

Notes on the display of characters in a Web browser:

In Windows, when you display the online manual from the **Start** menu, the HTML manual might be displayed in the Web browser that is already open.

2.9 Notes regarding operation

2.9.1 Notes on operating

- Before you start PFM - RM for Oracle, you need to complete installation and setup the Oracle Database and then start the Oracle Database. When the Oracle Database is not running, performance data except for Instance Availability (PD_PDIA) and Server Status (PD_STAT) is not collected. Also, if an Oracle instance or container is mounted, performance data is not collected.
- After you stop PFM - Remote Monitor for Oracle, you can change constitution or perform maintenance of Oracle Database instance or container.
- When PFM - RM for Oracle collects the following records obtained dynamic performance v$ views (such as V $ACCESS, V$OPEN_CURSOR), an error (such as ORA-00600, ORA-00602) might be output from the Oracle Database and it might fail to collect the performance data. In this case, when the records are collected at next time, it collects the performance data again.
  - Activity Summary (PD_PDAS) record
  - Open Cursor (PD_PDOC) record
  - Session Detail (PD_PDS) record
- If you do not stop PFM - RM for Oracle before you stop the monitored Oracle Database instance or container, you may not be able to stop the Oracle Database by using the NORMAL shutdown procedure. To stop the Oracle Database, you need to stop PFM - RM for Oracle beforehand or else use the IMMEDIATE shutdown procedure.
- When you fail in monitoring using sys account, either set the following 1 and 2 together, or confirm 3 setting.
  1. Create a password file.
  2. Set "exclusive" as the value of the "remote_login_passwordfile" initialization parameter.
  3. Set "true" as the value of the "o7_dictionary_accessibility" initialization parameter.
- If the expiration date is set on oracle_passwd, once the password is out of date connections to Oracle fail so that PFM - RM for Oracle cannot collect the performance information. In order to avoid connection errors, perform either of the following procedures before the password is expired:

  - Unset the expiration date of the password

  - After updating password, execute the `jpcconf inst setup` command to update oracle_passwd.

  Note that the Oracle default profile is applied to the Oracle account created by `mk_rmus.sql`. For details about the above settings, see the manual for Oracle Database.
- When a connection error occurred while PFM - RM for Oracle is running, an error is logged to the sqlnet.log file is stored in the directory specified by Oracle. When you use Oracle Database 11g or later without setting ORACLE_BASE, the sqlnet.log is stored in the directory created under the "/" directory. Before you start PFM - RM for Oracle, the sqlnet.log can also be stored in the directory specified by the ORACLE_BASE environment variable.
- PFM - RM for Oracle that monitors performance data for each an instance of the node cannot monitor Oracle RAC One Node configuration has dynamically changed Oracle SIDs.
- When specifying an execution module in the Windows WOW64 system directory (SysWOW64) for an alarm action definition, see the chapter on notes on creating alarms in the *JP1/Performance Management Planning and Configuration Guide*.
- For notes on executing the `jpctool service list` command for the Remote Monitor Collector service or Remote Monitor Store service, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

- For notes on executing the `jpcspm start` command or the `jpcspm stop` command for PFM - RM for Oracle, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.
- In Windows, when you perform a new installation of this product, the first icon displayed might be replaced immediately by another icon. This problem concerns only what icon is displayed. Product operation is not affected.
- In Linux, when it starts by Run Level 3 and 5 of the operating system regulations, the auto-start of the Performance Management service is effective. When it starts by Run Level 0 and 6 of the operating system regulations, the auto-stop of the Performance Management service is effective. Neither the auto-start nor the auto-stop operates when starting by Run Level 1 and 2.

2.9.2 Notes on monitoring Oracle Database 12c Release 2 or later

(1) Notes on monitoring all version of Oracle Database 12c Release 2 or later

- PFM - RM for Oracle collects performance data of the record field size from Oracle. Therefore, if Oracle contains data that exceeds the field size, the last character of the performance data might be unreadable. The following table lists the applicable fields:

Record name	Field name
Lock Waiters (PD_PDLW)	Holding User
	Waiting User
Open Cursor (PD_PDOC)	User
Session Detail (PD_PDS)	Module
	OS User
	Schema Name
	User
Session I/O Interval (PI_PIIO)	User
Session Statistics Summary (PD_PDS2)	User
Transaction (PD_PDTR)	User
Transaction Lock (PD_PDTL)	Object Name
	Owner
	User

- If you set the INSTANCE_MODE Oracle Database initialization parameter to READ-MOSTLY or READ-ONLY, PFM - RM for Oracle cannot collect the performance information.
- To use Oracle Client 12c or later (about Oracle Client 18c) to monitor an Oracle Database, set to `oracle_version` instance information is `12`. If set a value invalid, the following message appears:

  KAVE05924-W An invalid character string was entered.

(2) Notes on monitoring verison of Oracle Database 18c or later

When set the `OPTIMIZER_IGNORE_HINTS` initialization parameter in enable, it may take an amount of time to perform record collection. In this case, consider that disable the initialization parameter.

3 Operating PFM - RM for Oracle in a Cluster System

This chapter describes the procedures for installing and setting up PFM - RM for Oracle for use in a cluster system. This chapter also describes the flow of processing when you use PFM - RM for Oracle in a cluster system.

3.1 Cluster system overview

A *cluster system* is a system in which multiple server systems are linked and operated as a single system. The Oracle Database that is a monitoring target program of PFM - RM for Oracle can operate in the following cluster systems:

- An HA (High Availability) cluster system configured for Oracle
- Oracle Real Application Clusters or Oracle Parallel Server

PFM - RM for Oracle can operate in cluster systems as well as in single systems.

This section describes the configuration you use for operating PFM - RM for Oracle in a cluster system. For an overview of cluster systems and information about the system configuration when you use a Performance Management system in a cluster system, see the chapter on operation in a cluster system in the *Job Management Partner 1/Performance Management System Configuration and User's Guide*.

The term *cluster system* when used alone in this chapter refers to an HA cluster system.

Oracle Database 12c Release 2 or later in a CDB configuration that is a monitoring target of PFM - RM for Oracle can operate in a manner similar to a cluster system in a non-CDB configuration.

3.1.1 HA cluster system

There are two methods to operate PFM - RM for Oracle in an HA cluster system:

- Operate PFM - RM for Oracle when Oracle Database operates in an HA cluster system.
- Operate PFM - RM for Oracle in an HA cluster system.

The following describes the system configurations in each case.

(1) The system configuration of PFM - RM for Oracle monitoring Oracle Database in an HA cluster system

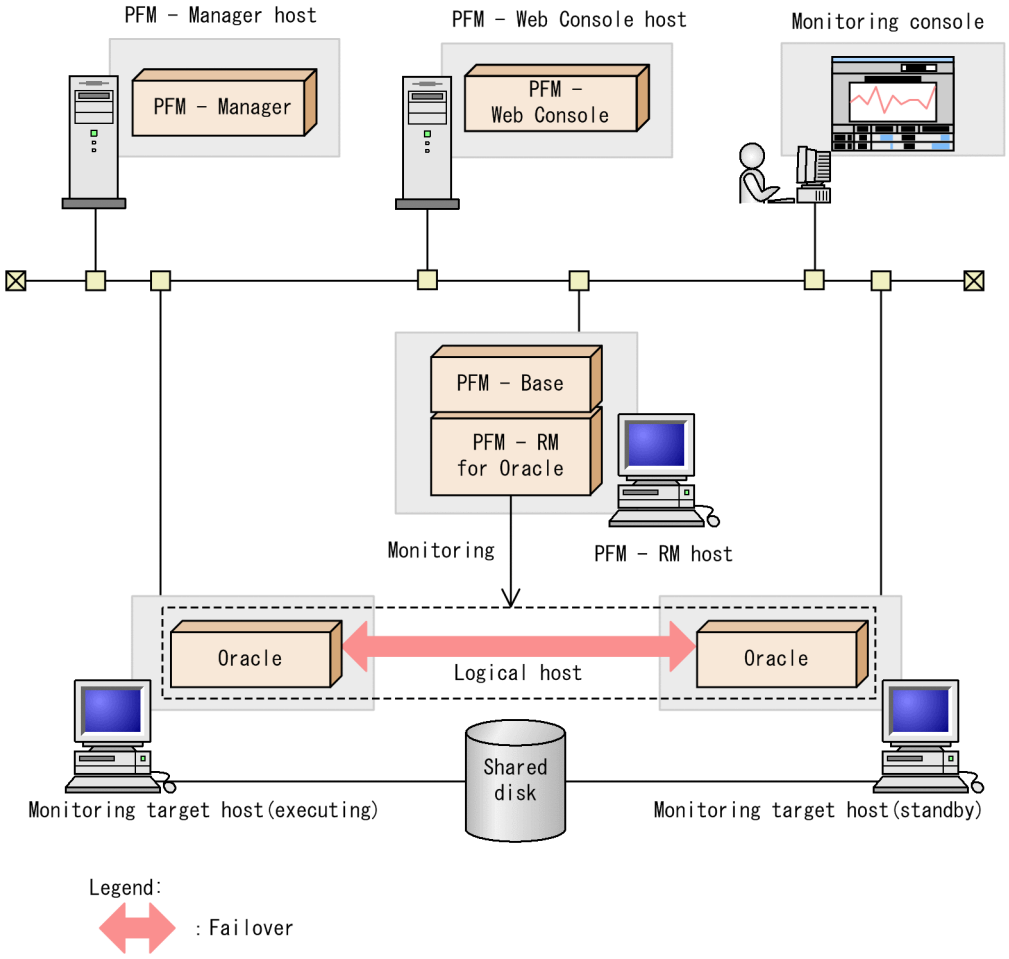
You can improve availability of an Oracle Database (single-instance Oracle) by using it in an HA cluster system, which can perform a failover if a failure occurs.

Typically, when you operate Oracle in an HA cluster system, you construct an environment that permits execution of the same Oracle instance on both an executing node and a standby node. The configuration you use stores a single set of Oracle data (data files, configuration files, log files, etc.) on a shared disk.

When you monitor Oracle in an HA cluster system by PFM - RM for Oracle, the network environment must be set up so that the host on which you install PFM - RM for Oracle can connect to the monitoring target Oracle host by its logical hostname and logical IP.

You can configure PFM - RM for Oracle as if PFM - RM for Oracle monitors an Oracle host in non-cluster system, when the monitoring target Oracle host is configured as in the following figures:

Figure 3–1: Example of PFM - RM for Oracle monitoring Oracle in HA cluster system



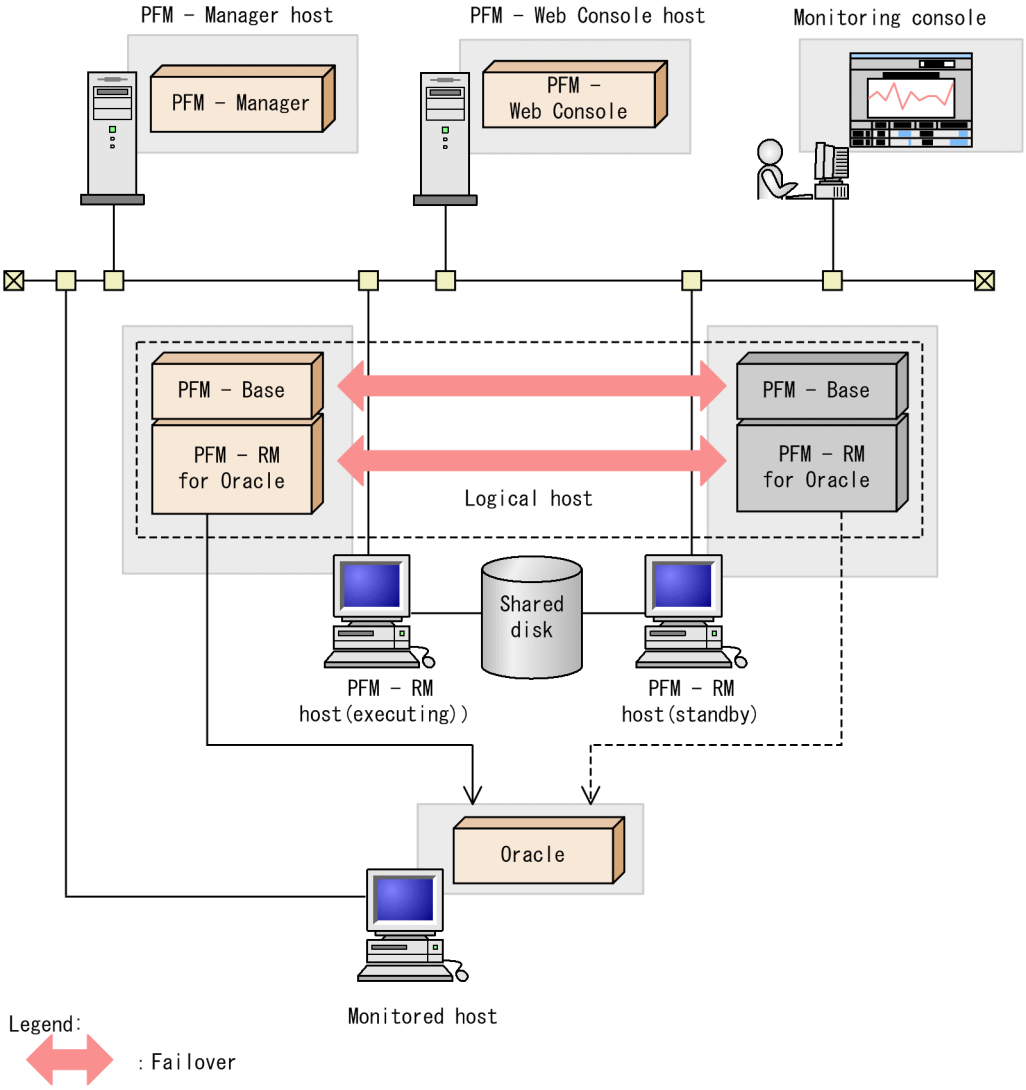
To control Oracle, you usually use solution products for controlling Oracle from the cluster software. For example, you use Oracle Fail Safe with Windows WSFC. For UNIX, you use products provided by various cluster software vendors.

There are also cases when the configuration or method of operating Oracle in a cluster system depends on the system.

(2) PFM - RM for Oracle configuration in an HA cluster system

PFM - RM for Oracle can operate in an HA cluster system and can monitor Oracle in a cluster configuration. Figure 3-2 shows a configuration for operating PFM - RM for Oracle in an HA cluster system.

Figure 3–2: Example of an PFM - RM for Oracle configuration in an HA cluster system



As Figure 3-2 shows, PFM - RM for Oracle operates in a cluster system and monitors Oracle.

When a failure occurs, failover applies to PFM - RM for Oracle at the same time it applies to Oracle, allowing PFM - RM for Oracle to continue monitoring Oracle.

PFM - RM for Oracle also stores definition information about the shared disk and continues operating when a failover occurs. When there are multiple Performance Management programs on a single logical host, all programs use the same shared directories.

When you monitor multiple Oracles, you can install PFM - RM for Oracle on separate logical hosts so that each PFM - RM for Oracle can operate and perform a failover independently.

3.1.2 Load-balancing cluster system

(1) Configuration of Oracle in a load-balancing cluster system (Oracle Real Application Clusters)

Oracle Real Application Clusters (or Oracle Parallel Server) is a system consisting of multiple nodes running Oracle that function as a single Oracle system that processes a single database. The data is stored on a shared disk and is shared by all nodes.

Distribution of workload to multiple nodes improves scalability and fault tolerance.

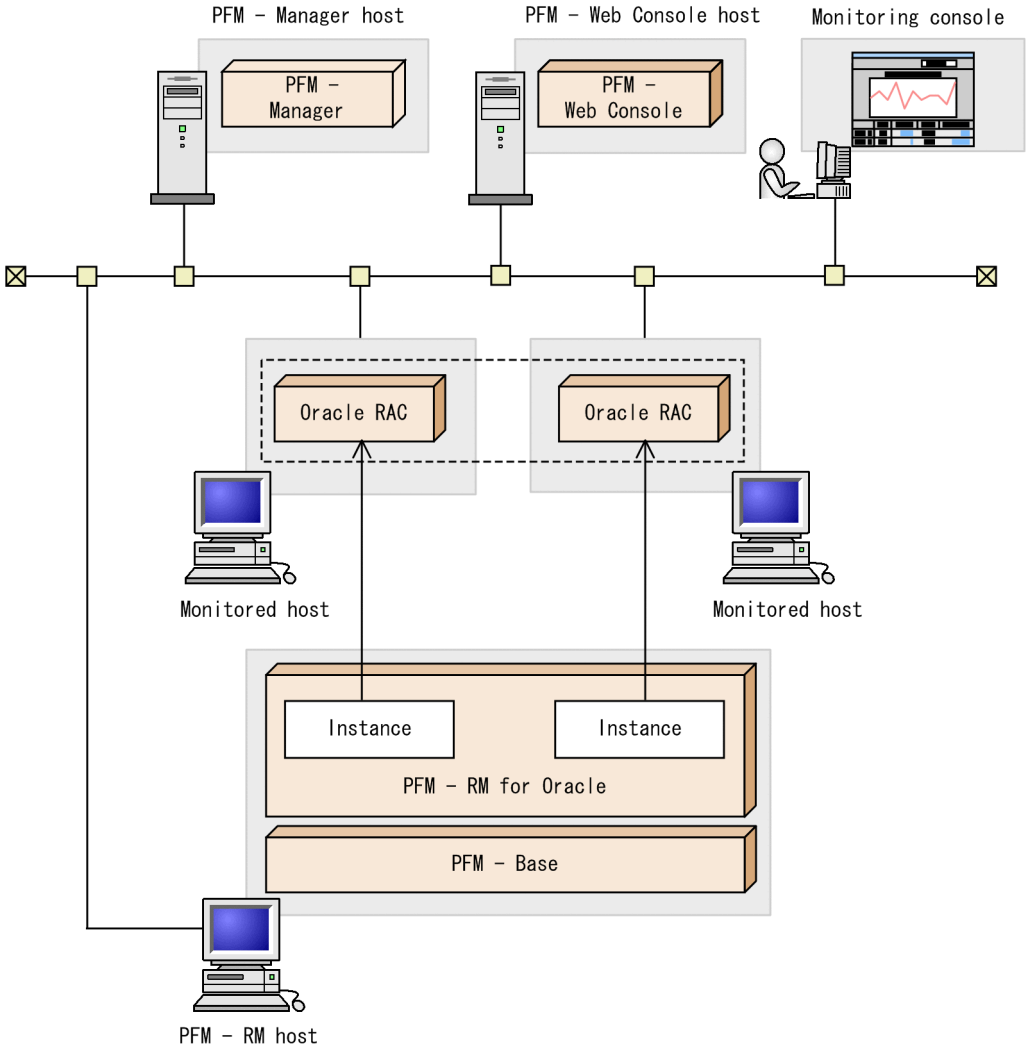
Although applications see the set of nodes as a single Oracle system, each node runs an Oracle system with a unique instance name. For example, a database might be run by Oracle instances `SID=ora1` at `node1` and `SID=ora2` at `node2`. Applications use a global database name to access the database via Oracle Net Services.

For details about Oracle Real Application Clusters (or Oracle Parallel Server), see your Oracle documentation.

(2) Configuration of PFM - RM for Oracle if Oracle is in a load-balancing cluster system configuration

To operate PFM - RM for Oracle in a non-cluster system if Oracle is operating in a load-balancing cluster system, use a configuration such as that shown in the following figure.

Figure 3–3: Example configuration of PFM - RM for Oracle in a load-balancing cluster system



An Oracle system with a unique instance name is run on each node. PFM - RM for Oracle monitors the Oracle instance on each node.

As with a single-node system, set up PFM - RM for Oracle and configure it to monitor each node's Oracle Real Application Clusters instance.

Note:

If Oracle is operating in a load-balancing cluster system, you can operate PFM - RM for Oracle in a non-cluster system in the same way as in a system that consists of multiple stand-alone nodes. That is, you can operate PFM - RM for Oracle in the same way as in a typical non-cluster system. In this case, do not register PFM - RM for Oracle in the cluster software.

If Oracle is operating in a load-balancing cluster system, you can operate PFM - RM for Oracle in an HA cluster configuration. For information about how to operate PFM - RM for Oracle in an HA cluster configuration, see *3.1.1(2) PFM - RM for Oracle configuration in an HA cluster system*. Note that when you do this, set up the PFM - RM for Oracle instance to monitor the Oracle Real Application Clusters instance on each node in the same way as in a non-cluster configuration.

3.2 Processing during failover

When a failure occurs on the executing host, processing moves to the standby host.

This section describes how PFM - RM for Oracle operates during failover in the following two cases:

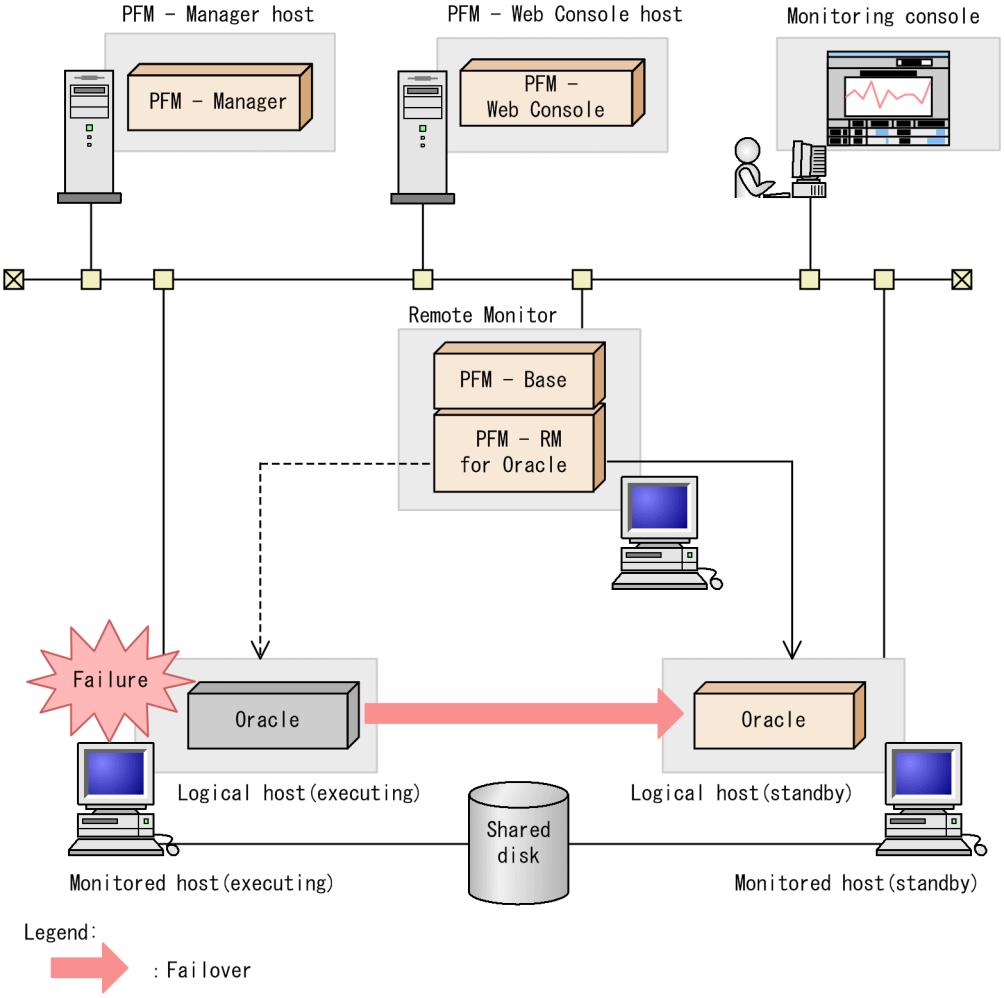
- Failure occurs on a monitoring Oracle host in a cluster system and failover happens
- Failure occurs on PFM - RM for Oracle host in a cluster system and failover happens

This section also describes the effect that PFM - Manager failures have on PFM - RM for Oracle.

3.2.1 Failover when a failure occurs on a monitoring host

Figure 3-4 shows the processing when failover occurs on a monitoring Oracle host.

Figure 3–4: Processing when a monitoring Oracle host performs failover



Note:

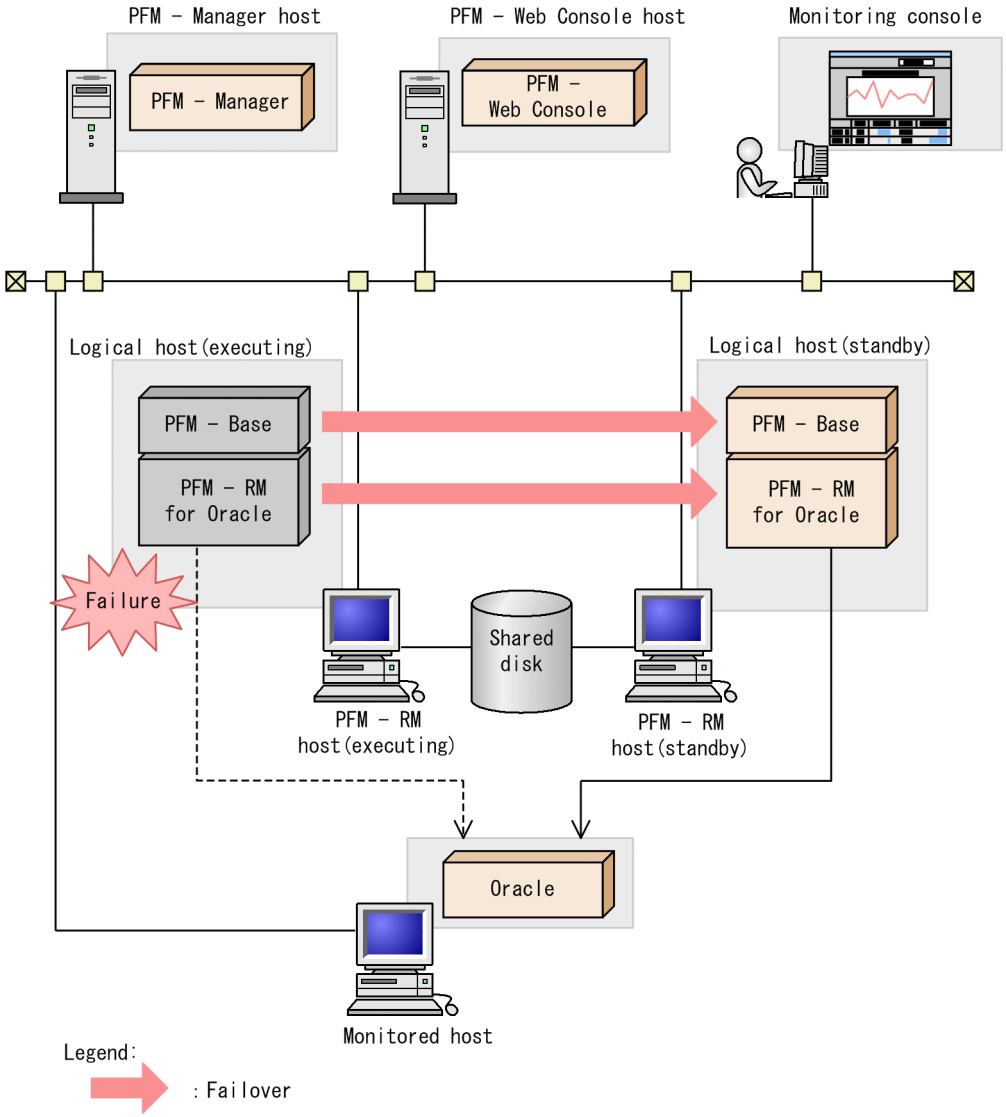
A failover on the monitoring Oracle host may cause temporary errors in the historical collection of the performance data.

Moreover, before and after the failover, the value of collected data may be negative. Note that for data after the failover is completed, positive values are used as the data differentials.

3.2.2 Failure occurs on PFM - RM for Oracle host

Figure 3-5 shows the processing when failover occurs on a PFM - RM for Oracle host.

Figure 3–5: Processing when a monitoring Oracle host performs failover



When you attempt to operate PFM - Web Console during failover of PFM - RM for Oracle, PFM - Web Console displays the message `There was no answer(-6)`. In such a case, wait for the failover to be completed before performing the PFM - Web Console operation.

Once PFM - RM for Oracle failover has been completed, you will be connected to the PFM - RM for Oracle that was started on the failover target node and you will again be able to operate PFM - Web Console.

Note:

When failover occurs on the PFM - RM for Oracle host, before and after the failover the value of collected data may be negative. Note that for data after the failover is completed, positive values are used as the data differentials.

3.2.3 Effects when PFM - Manager stops

PFM - Manager affects the entire Performance Management system when it stops.

PFM - Manager centrally manages the agent information of the PFM - RM for Oracle agents that are running on all nodes. It also controls notification of alarm events in the event a threshold value is exceeded during performance monitoring by PFM - RM for Oracle as well as execution of actions based on alarm events. Accordingly, when PFM - Manager stops, the entire Performance Management system is affected, as described in Table 3-1.

Table 3–1: Effect on PFM - RM for Oracle when PFM - Manager stops

Program name	Effects	Solution
PFM - RM for Oracle	If PFM - Manager stops while PFM - RM for Oracle is running, PFM - RM for Oracle: • Continues collecting performance data. • Retains alarm events for each alarm definition and retries until PFM - Manager is recovered if it cannot send the alarm events to PFM - Manager. When the number of retained alarm events exceeds 3, the oldest alarm event is overwritten. If PFM - RM for Oracle is stopped, all the alarm events that have been retained are deleted. • Resets, when PFM - Manager is restarted, the alarm statuses that have already been reported to PFM - Manager. The alarm statuses are then initialized after checking with PFM - RM for Oracle. • Takes a long time to stop if you attempt to stop it, because PFM - Manager cannot be notified.	Start PFM - Manager. You can continue to run any PFM - RM for Oracle that is currently running. Check the common log after PFM - Manager is recovered because alarms may not be reported exactly as expected. (KAVE00024-I)

Consider the effects of stopping PFM - Manager when considering how to operate Performance Management. There are times when you have to stop PFM - Manager in order to change the configuration or perform maintenance work. Hitachi recommends that you schedule maintenance work for times that will have the least impact on operations.

3.3 Installation and setup (Windows)

This section describes how to install and set up PFM - RM for Oracle in a cluster system.

Note that even if the monitoring Oracle host is in a cluster system you must perform an installation and setup procedures for a normal non-cluster system when PFM - RM for Oracle is in a non-cluster system. For details about the installation and setup procedure for a normal non-cluster system, see *2.1 Installation and setup (Windows)*.

For details about how to install and set up PFM - Manager, see the chapters on setup and operation in a cluster system in the *Job Management Partner 1/Performance Management System Configuration and User's Guide*.

3.3.1 Preparation for installation and setup (Windows)

This subsection describes the prerequisites for installation and setup, and provides cautionary notes and other information you should know before installing and setting up PFM - RM for Oracle.

(1) Prerequisites

The following are the prerequisites for running PFM - RM for Oracle in a cluster system.

(a) Cluster system

Make sure that the following conditions are satisfied:

- The cluster system is controlled by cluster software.
- The cluster software is able to start and stop PFM - RM for Oracle on a logical host.
- Both the executing and standby systems are configured to suppress error reporting to Microsoft.
  When an application error occurs, a dialog box giving you the option of reporting the problem to Microsoft appears. Because the dialog box can interfere with failover, you must disable error reporting. If the nodes have not been set up to disable error reporting, take the following steps.

In Windows Server 2012

1. Choose **Control Panel** > **System and Security** > **Action Center** > **Maintenance**.
2. In **Check for solutions to unreported problems**, click **Settings**.
3. In the **Windows Error Reporting Configuration** dialog box, choose **I don't want to participate, and don't ask me again**.
4. Click the **OK** button.

In Windows Server 2016 or later

1. Right-click the Windows **Start** menu and then choose **Run** from the displayed menu.
2. Enter `gpedit.msc`, and then click the **OK** button.
   The Local Group Policy Editor appears.
3. Click **Computer Configuration**, **Administrative Templates**, **Windows Components**, and then **Windows Error Reporting**.
4. In the right pane, right-click **Disable Windows Error Reporting**, and then from the displayed menu, choose **Edit**.
   The setting window appears.

5. In the setting window, select the **Enabled** check box.
6. Click the **OK** button.

(b) Shared disk

Make sure that the following conditions are satisfied:

- Each logical host has a shared disk that the standby node can inherit from the executing node.
- The shared disk is physically connected to each node via a Fibre Channel, SCSI, or similar connection.
  Performance Management does not support the use of network drives or disks replicated over the network as the shared disk.
- If a failover is requested while a process is accessing the shared disk, the cluster software can take the shared disk offline and force a failover.
- Each instance of Performance Management programs on the same logical host uses the same directory on the shared disk.
  Note that you can change the location of the Store database to another directory on the shared disk.

(c) Logical host names and logical IP addresses

Make sure that the following conditions are satisfied:

- Each logical host has a logical host name and a corresponding logical IP address, which the standby node inherits from the executing node.
- Logical host names and logical IP addresses are set in the `hosts` file and on the name server.
- For DNS operation, host names in FQDN format cannot be used. For the logical host name, use the host name with the domain name portion removed.
- Physical host names and logical host names are unique within the system.

Notes:

- Do not specify the physical host name (the host name displayed by the `hostname` command) as the name of the logical host. If you do so, normal communication may not be possible.
- Logical host names can consist of 1 to 32 alphanumeric characters. A logical host name cannot include space characters or any of the following characters:
  `/ \ : ; * ? ' " < > | & = , .`
- You cannot specify `localhost`, an IP address, or a host name beginning with a hyphen (`-`) as a logical host name.

(d) Settings when IPv6 used

Performance Management supports IPv6 environments as well as IPv4 environments as a network configuration. Therefore, Performance Management can operate even in a network configuration in which both an IPv4 environment and an IPv6 environment are used.

PFM - RM for Oracle can communicate with PFM - Manager via IPv6. Note that this explanation applies only when the OS of a host on which PFM - RM for Oracle and PFM - Manager are installed is Windows or Linux.

For details about the scope of communication in an environment with both IPv4 and IPv6, see *M. About Communication in IPv4 Environments and IPv6 Environments*.

When you want to use IPv6 for communication between PFM - Manager and PFM - RM for Oracle, the settings for using IPv6 must be enabled for both the PFM - Manager host and the PFM - RM host. In addition, before installing PFM - RM for Oracle, you need to enable the use of IPv6 on the PFM - RM host. You have to execute the `jpcconf ipv6 enable` command to enable this setting. If this setting is already enabled, however, you do not need to execute the command. If you want to check whether the use of IPv6 is enabled, execute the `jpcconf ipv6 display` command. Execute the `jpcconf ipv6 enable` command separately on the executing node and on the standby node.

For details about the `jpcconf ipv6 enable` command and `jpcconf ipv6 display` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*. For details about the conditions or occasions for executing the `jpcconf ipv6 enable` command, see the chapter that describes network configuration examples in an environment that includes IPv6 in the *JP1/Performance Management Planning and Configuration Guide.*

When you use IPv6 for communication between a monitored host and PFM - RM for Oracle, specify the name of a monitored host where name resolution can be performed.

Communication between PFM - RM for Oracle and a monitoring target is performed with an IP address that can be resolved. Also, if an IPv4 environment and an IPv6 environment are both used, and communication between PFM - RM for Oracle and the monitoring target fails with an IP address that can be resolved, the communication is not retried by using another IP address.

For example, if communication fails when IPv4 is used, IPv6 is not used to retry communication. Similarly, if communication fails when IPv6 is used, IPv4 is not used to retry communication. Make sure beforehand that a connection can be established.

(2) Information required to set up PFM - RM for Oracle to run on a logical host

When you set up PFM - RM for Oracle to run in a logical host environment, you must specify the information shown in the following table, in addition to the environment information required for PFM - RM for Oracle setup.

Table 3–2: Information required to set up PFM - RM for Oracle to run on a logical host

Item	Example
Logical host name	`jp1-halora`
Logical IP address	`172.16.92.100`
Shared disk	`S:\jp1`

When multiple Performance Management programs are installed on a single logical host, the programs share the same directory on the shared disk.

For details about how much shared disk capacity is needed, see *A. Estimating System Requirements*.

(3) Cautionary notes on failing over a logical host with PFM - RM for Oracle

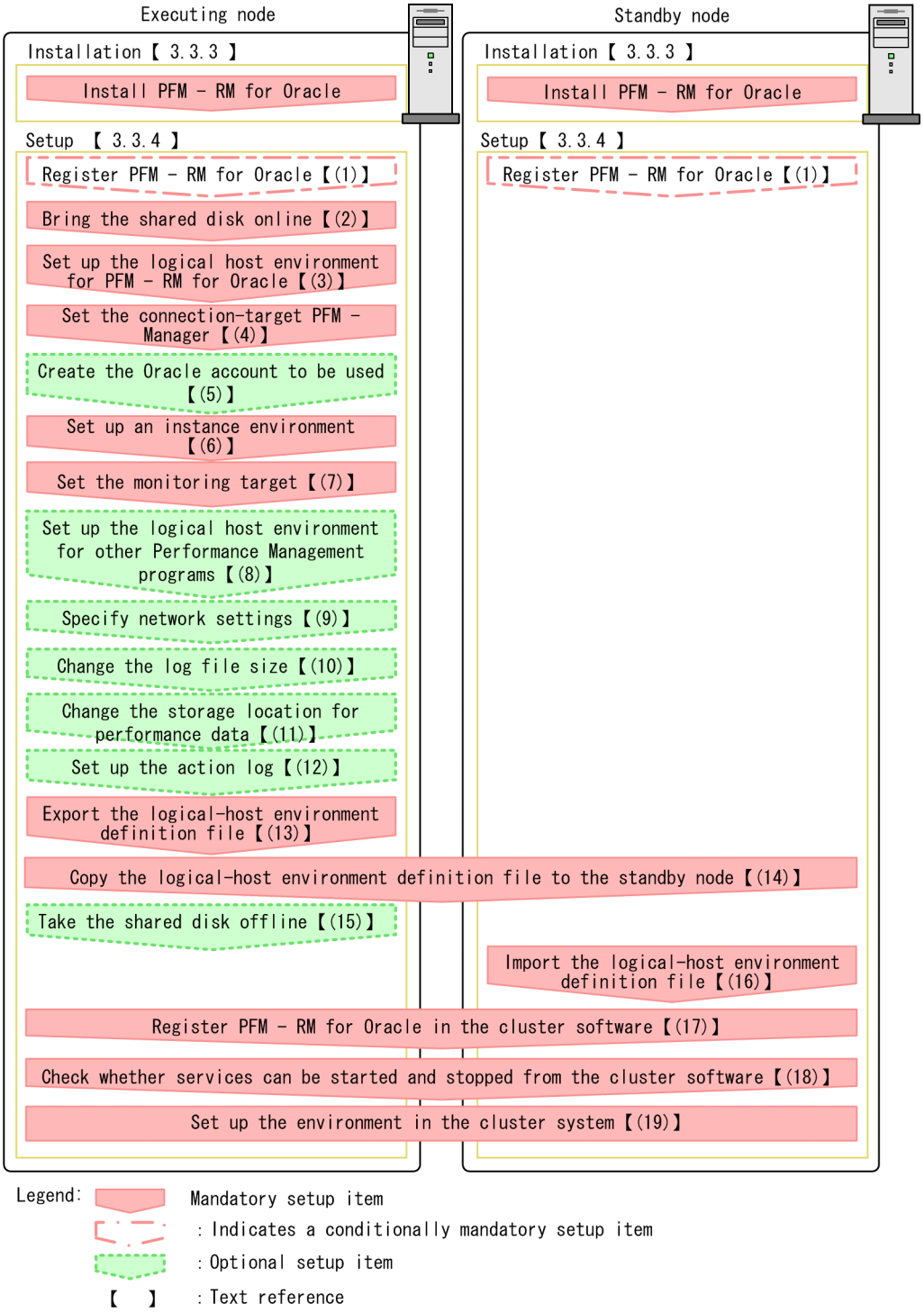
In a system configuration in which PFM - RM for Oracle runs on a logical host, consider whether you want the entire logical host to fail over when an error occurs in PFM - RM for Oracle.

If the entire logical host is failed over when an error occurs in PFM - RM for Oracle, business applications on the same logical host will also be failed over. Failover of these applications may affect any business operations that are in progress.

3.3.2 Installation and setup workflow (Windows)

The following figure shows the workflow for installing and setting up PFM - RM for Oracle to run on a logical host in a cluster system.

Figure 3–6: Workflow for installing and setting up PFM - RM for Oracle to run on a logical host in a cluster system (Windows)



Note:

The definitions of PFM - RM for Oracle in a physical host environment cannot be inherited by setting up PFM - RM for Oracle in a logical host environment. For logical and physical host environments, a new environment is created when an instance environment is set up.

Note that you, for setup commands that require user input, you can select whether to execute such commands interactively or non-interactively.

If you execute a setup command interactively, you need to enter values in accordance with the command directives.

If you execute a setup command non-interactively, user input during command execution is not required because such input can be provided instead by values in option specifications or in definition files. Also, batch processing or remote execution can automate setup operations to reduce administrator workload and operating costs. Non-interactive commands are useful in the following cases:

- If you want to regularly change the passwords used to connect with monitoring targets
- If you want to improve operational efficiency when adding multiple monitoring targets

For details about commands, see the manual *JP1/Performance Management Reference*.

3.3.3 Installation procedure (Windows)

Install PFM - RM for Oracle on the executing node and the standby node.

> **Important**
>
> You must install PFM - RM for Oracle on a local disk. Do not install it on a shared disk.

The installation procedure is the same as the installation procedure in a non-cluster system. For details about the installation procedure, see *2.1.3 Installation procedure (Windows)*.

3.3.4 Setup procedure (Windows)

This subsection describes how to set up Performance Management to run in a cluster system.

Setup must be performed first on the executing node and then on the standby node.

Executing indicates a task to be performed on the executing node. Standby indicates a task to be performed on the standby node. Option indicates a setup item that is required depending on the environment or an optional setup item used when the default is to be changed.

Note:

Because the `JPC_HOSTNAME` environment variable is used by Performance Management, do not set this environment variable elsewhere in the system. Doing so could disrupt Performance Management operation.

(1) Register PFM - RM for Oracle Executing Standby Option

To perform integrated management of PFM - RM for Oracle using PFM - Manager and PFM - Web Console, you must register PFM - RM for Oracle with PFM - Manager and PFM - Web Console.

The conditions and procedure for registering PFM - RM for Oracle are the same as when a cluster system is not used. For details about the conditions and procedure for registering PFM - RM for Oracle, see *2.1.4(1) Register PFM - RM for Oracle*.

(2) Bring the shared disk online Executing

Make sure that the shared disk is online. If the shared disk is not online, use the cluster software or the volume manager to bring it online.

(3) Set up the logical host environment for PFM - RM for Oracle Executing

Execute the `jpcconf ha setup` command to set up the logical host environment. When you execute the command, the necessary files are copied to the shared disk, the logical host definition is set up, and the logical host environment is created.

Note:

Before you execute the command, stop all Performance Management programs and services throughout the Performance Management system. For details about how to stop services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

To set up the logical host environment:

1. Execute the `jpc conf ha setup` command to create the logical host environment for PFM - RM for Oracle.

   Execute the command as follows:

   ```
   jpcconf ha setup -key RMOracle -lhost jp1-halora -d S:\jp1
   ```

   Use the `-lhost` option to specify the logical host name. In the example above, the logical host name is `jp1-halora`. For DNS operation, specify a logical host name with the domain name portion removed.

   Specify the name of the shared disk directory as the environment directory name of the `-d` option. For example, if you specify `-d S:\jp1`, the directory `S:\jp1\jp1pc` is created, and the files for the logical host environment are created in that directory.

   Notes:

   - PFM - RM for Oracle runs on file systems. Specify the shared disk for the file system.
   - For the environment directory name, do not specify a path containing a parenthesis ((,)).

   If the path contains a parenthesis, the logical host environment will be created successfully, but PFM - RM for Oracle startup may fail.

2. Execute the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Confirm that the logical host environment you created has been set up correctly.

(4) Set the connection-target PFM - Manager Executing

Execute the `jpcconf mgrhost define` command to specify which PFM - Manager is to manage PFM - RM for Oracle.

1. Execute the `jpcconf mgrhost define` command to set the connection-target PFM - Manager.

   Execute the command as follows:

```
jpcconf mgrhost define -host jp1-hal -lhost jp1-halora
```

Use the `-host` option to specify the host name of the connection-target PFM - Manager. If that PFM - Manager is running in a logical host environment, specify the logical host name of the PFM - Manager in the `-host` option. In the example above, the logical host name of PFM - Manager is `jp1-hal`.

Use the `-lhost` option to specify the logical host name of PFM - RM for Oracle. In the example above, the logical host name of PFM - RM for Oracle is `jp1-halora`.

Although an example of interactive command execution is shown here, the `jpcconf mgrhost define` command can be also executed non-interactively. For details about the `jpcconf mgrhost define` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

(5) Create an Oracle account to be used

Executing | Option

Create an Oracle account that has specific system privileges to collect performance data for the Oracle Database monitored by PFM - RM for Oracle.

For details about how to create an Oracle account, see *2.1.4(2) Create an Oracle account to be used in PFM - RM for Oracle*.

This setup task is unnecessary when you use the `sys` account.

(6) Set up an instance environment

Executing

Execute the `jpcconf inst setup` command to set up an instance environment for PFM - RM for Oracle.

The setup procedure is the same as the setup procedure in a non-cluster system, except that, in a cluster system, you must specify the logical host name in the `-lhost` option when executing the `jpcconf inst setup` command.

In a cluster system, the `jpcconf inst setup` command is executed in the following format:

```
jpcconf inst setup -key RMOracle -lhost logical-host-name -inst instance-nam
e
```

Although an example of interactive command execution is shown here, the `jpcconf inst setup` command can be also executed non-interactively. For details about the `jpcconf inst setup` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

As the agent log output folder (the value of `log_path`), specify the path of a folder that is on the shared disk.

For details about other settings and procedures, see *2.1.4(3) Set up an instance environment*.

(7) Set the monitoring target

Executing

Execute `jpcconf target setup` command to specify which Oracle host for PFM - RM for Oracle to monitor.

The setup procedure is the same as the setup procedure in a non-cluster system, except that, in a cluster system, you must specify the logical host name in the `-lhost` option when executing the `jpcconf tatget setup` command.

In a cluster system, the `jpcconf target setup` command is executed in the following format:

```
jpcconf target setup -key RMOracle -inst instance-name -target monitoring-ta
rget-name -lhost logical-host-name
```

Although an example of interactive command execution is shown here, the `jpcconf inst setup` command can be also executed non-interactively. For details about the `jpcconf inst setup` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

For details about other settings and procedures, see *2.1.4(3)(b) Set the monitoring target*.

(8) Set up the logical host environment for other Performance Management programs Executing Option

At this point, set up any other Performance Management programs, such as PFM - Manager or PFM - RM, on the same logical host.

For details about how to set up these products, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*, and the chapter on operation in a cluster system in the manuals for the applicable version of PFM - RM.

(9) Specify network settings Executing Option

This setup task is necessary only when you change the network settings to match the configuration in which Performance Management is used.

The following are the two network setting items:

- IP addresses

  To specify the IP address used by Performance Management in a network environment where multiple LANs are connected, directly edit the contents of the `jpchosts` file.

  After editing the file, copy it from the executing node to the standby node.

  For details about how to set IP addresses, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide.*

- Port numbers

  If Performance Management programs will communicate with each other through a firewall, use the `jpcconf port` command to set the port numbers.

  For details about how to set port numbers, see the chapter on installation and setup and the chapters on setup and operation in a cluster system in the *JP1/Performance Management Planning and Configuration Guide.*

(10) Change the size of log files Executing Option

The operating status of Performance Management is output to a log file unique to Performance Management. This log file is called the common message log. This setting is required only when you wish to change this file size.

For details, see the chapter that describes installation and setup in the *JP1/Performance Management Planning and Configuration Guide.*

(11) Change the storage location of performance data Executing Option

Perform this setting only if you want to change the folders where the database of performance data managed by PFM - RM for Oracle is saved, backed up, exported, or imported.

For details, see *2.6.1 Changing the storage location of performance data*.

(12) Setting up the action log Executing Option

This setting is required to output action log when alarm occur. The action log stores history information that is output in conjunction with the alarms for thresholds related to system load and other conditions.

For details about how to set up the action log, see *K. Outputting Action Log Information*.

(13) Export the logical-host environment definition file Executing

Once you have created the logical host environment for PFM - RM for Oracle, export the environment definition as a file. In the export process, a file containing the collective definition information for all Performance Management programs set up on that logical host is output. Export the environment definition only after you have set up all additional Performance Management programs on the logical host.

To export the environment definition of the logical host:

1. Execute the `jpcconf ha export` command to export the environment definition of the logical host.

   The definition information for the logical host environment you created is output to an export file. You can give this file any name you wish.

   For example, execute the command as follows to output the logical host environment definition to the file `lhostexp.txt`:

   ```
   jpcconf ha export -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha export` command can be also executed non-interactively. For details about the `jpcconf ha export` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

(14) Copy the logical-host environment definition file to the standby node

Executing Standby

Copy the file you exported in *(13) Export the logical-host environment definition file* from the executing node to the standby node.

(15) Take the shared disk offline Executing Option

Use the cluster software or the volume manager to take the shared disk offline. Note that if you intend to continue using the shared disk, you do not need to take it offline at this point.

(16) Import the logical-host environment definition file Standby

On the standby node, import the exported file you copied from the executing node.

Use the `jpcconf ha import` command to set up the environment definition for the Performance Management programs of the logical host that you created on the executing node so that they run on the standby node. If more than one Performance Management program was installed on the logical host, the definition information for all of the programs is imported in batch form.

Note that the shared disk does not need to be online when you execute this command.

To import the logical-host environment definition file:

1. Execute the `jpcconf ha import` command to import the environment definition of the logical host.

Execute the command as follows:

```
jpcconf ha import -f lhostexp.txt
```

Although an example of interactive command execution is shown here, the `jpcconf ha import` command can be also executed non-interactively. For details about the `jpcconf ha import` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

When you execute the command, the settings on the standby node are changed to reflect the environment described in the export file. This sets up the standby node to run PFM - RM for Oracle as a logical host.

If you used the `jpcconf ha import` command to assign fixed port numbers during setup, the same port numbers will take effect on the standby node.

2. Execute the `jpcconf ha list` command to check whether the logical host is set up correctly.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Check whether the same output is displayed as when you executed `jpcconf ha list` on the executing node.

(17) Register PFM - RM for Oracle in the cluster software Executing Standby

If you intend to use Performance Management programs in a logical host environment, make sure that the programs are registered in the cluster software. Also, set up the environment so that the Performance Management programs are started and stopped based on instructions from the cluster software.

For details about how to register PFM - RM for Oracle in the cluster software, see your cluster software documentation.

For the dependency settings specified if PFM - RM for Oracle is on the PFM - Manager logical host, see the chapter on cluster system setup and operation in the JP1/Performance Management User's Guide.

This subsection describes how to register PFM - RM for Oracle in your cluster software, using the settings for Windows WSFC as an example.

Register the following services of PFM - RM for Oracle in the cluster software:

Table 3–3: PFM - RM for Oracle services to be registered in the cluster software

No.	Name	Service name	Dependencies
1	PFM - RM Store for Oracle *instance-name* [*LHOST*]	`JP1PCAGT_1S`_instance-name_ [*LHOST*]	IP address resource Physical disk resource#
2	PFM - RM for Oracle *instance-name* [*LHOST*]	`JP1PCAGT_1A`_instance-name_ [*LHOST*]	Cluster resource in No. 1
3	PFM - Action Handler [*LHOST*]	`JP1PCMGR_PH` [*LHOST*]	IP address resource Physical disk resource#

#

Shared disk resource

Replace *LHOST* with the logical host name. For example, if the instance name is `SDC1` and the logical host name is `jp1-halora`, the display name of the service will be `PFM - RM Store for Oracle SDC1 [jp1-halora]`, and the service name will be `JP1PCAGT_1S_SDC1 [jp1-halora]`.

For WSFC, register these services as WSFC resources. Set each resource as follows:

- In **Resource type**, register the resource as **Generic Service**.
- Set **Dependencies** as shown in Table 3-3.
- Set the Policies tab in Properties by taking into account whether you want a failover to occur in the event of a Performance Management program failure.

  For example, to trigger a failover when a failure occurs in PFM - RM for Oracle, set the Policies tab as follows:

  - Select the If resource fails, attempt restart on current node radio button.
  - Select the If restart is unsuccessful, fail over all resources in this Role ceck box.
  - In principle, set Maximum restarts in the specified period: to 3.

Note:

The cluster software is responsible for starting and stopping the services that have been registered in it. Set **Startup type** for those services to **Manual** to prevent them from starting automatically when the OS starts. When you set up a service using the `jpcconf ha setup` command, **Startup type** for the service will be set to **Manual**. Also, do not use the following command to forcibly stop a service registered in the cluster software:

`jpcspm stop -key all -lhost` *logical-host-name* `-kill immediate`

(18) Check whether services can be started and stopped from the cluster software Executing Standby

Check whether the cluster software is operating correctly by using it to issue start and stop requests to Performance Management programs on each node.

(19) Set up the environment in the cluster system Executing Standby

After setting up the Performance Management programs, use PFM - Web Console to set up the environment for the programs. You will then be able to display reports on the operating status of monitoring targets, and notify users whenever a problem occurs.

For details about setting up the environment for Performance Management programs, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*.

3.4 Installation and setup (UNIX)

This section describes how to install and set up PFM - RM for Oracle in a cluster system.

Note that even if the monitored Oracle host is in a cluster system you must perform an installation and setup procedures for a non-cluster system when PFM - RM for Oracle is in a normal non-cluster system. For details about the installation and setup procedure for a normal non-cluster system, see *2.2 Installation and setup (UNIX)*.

For details about how to install and set up PFM - Manager, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*.

3.4.1 Preparation for installation and setup (UNIX)

This subsection describes the prerequisites for installation and setup, and provides cautionary notes and other information you should know before installing and setting up PFM - RM for Oracle in a cluster system.

(1) Prerequisites

The following are the prerequisites for running PFM - RM for Oracle in a cluster system.

(a) Cluster system

Make sure that the following conditions are satisfied:

- The cluster system is controlled by cluster software.
- The cluster software is able to start and stop PFM - RM for Oracle on a logical host.

(b) Shared disk

Make sure that the following conditions are satisfied:

- Each logical host has a shared disk that the standby node can inherit from the active node.
- The shared disk is physically connected to each node via a Fibre Channel, SCSI, or similar connection.

  Performance Management does not support the use of network drives or disks replicated over the network as the shared disk.
- If a failover is requested while a process is accessing the shared disk, the cluster software can unmount the shared disk and force a failover.
- Each instance of Performance Management programs on the same logical host uses the same directory on the shared disk.

  Note that you can change the location of the Store database to another directory on the shared disk.

(c) Logical host names and logical IP addresses

Make sure that the following conditions are satisfied:

- Each logical host has a logical host name and a corresponding logical IP address, which the standby node inherits from the executing node.
- Logical host names and logical IP addresses are set in the `hosts` file and on the name server.
- For DNS operation, host names in FQDN format cannot be used. For the logical host name, use the host name with the domain name portion removed.

- Physical host names and logical host names are unique within the system.

Notes:

- Do not specify the physical host name (the host name displayed by the `uname -n` command) as the name of the logical host. If you do so, normal communication may not be possible.
- Logical host names can consist of 1 to 32 alphanumeric characters. A logical host name cannot include space characters or any of the following characters:
  `/ \ : ; * ? ' " < > | & = , .`
- You cannot specify `localhost`, an IP address, or a host name beginning with a hyphen (-) as a logical host name.

(d) Settings when IPv6 used

Performance Management supports IPv6 environments as well as IPv4 environments as a network configuration. Therefore, Performance Management can operate even in a network configuration in which both an IPv4 environment and an IPv6 environment are used.

PFM - RM for Oracle can communicate with PFM - Manager via IPv6. Note that this explanation applies only when the OS of a host on which PFM - RM for Oracle and PFM - Manager are installed is Windows or Linux.

For details about the scope of communication in an environment with both IPv4 and IPv6, see *M. About Communication in IPv4 Environments and IPv6 Environments*.

When you want to use IPv6 for communication between PFM - Manager and PFM - RM for Oracle, the settings for using IPv6 must be enabled for both the PFM - Manager host and the PFM - RM host. In addition, before installing PFM - RM for Oracle, you need to enable the use of IPv6 on the PFM - RM host. You have to execute the `jpcconf ipv6 enable` command to enable this setting. If this setting is already enabled, however, you do not need to execute the command. If you want to check whether the use of IPv6 is enabled, execute the `jpcconf ipv6 display` command. Execute the `jpcconf ipv6 enable` command separately on the executing node and on the standby node.

For details about the `jpcconf ipv6 enable` command and `jpcconf ipv6 display` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*. For details about the conditions or occasions for executing the `jpcconf ipv6 enable` command, see the chapter that describes network configuration examples in an environment that includes IPv6 in the *JP1/Performance Management Planning and Configuration Guide.*

When you use IPv6 for communication between a monitored host and PFM - RM for Oracle, specify the name of a monitored host where name resolution can be performed.

Communication between PFM - RM for Oracle and a monitoring target is performed with an IP address that can be resolved. Also, if an IPv4 environment and an IPv6 environment are both used, and communication between PFM - RM for Oracle and the monitoring target fails with an IP address that can be resolved, the communication is not retried by using another IP address.

For example, if communication fails when IPv4 is used, IPv6 is not used to retry communication. Similarly, if communication fails when IPv6 is used, IPv4 is not used to retry communication. Make sure beforehand that a connection can be established.

(2) Information required to set up PFM - RM for Oracle to run on a logical host

When you set up PFM - RM for Oracle to run in a logical host environment, you must specify the information shown in the following table, in addition to the environment information required for PFM - RM for Oracle setup.

Table 3–4: Information required to set up PFM - RM for Oracle to run on a logical host

Item	Example
logical host name	`jp1-halora`
logical IP address	`172.16.92.100`
Shared disk	`/jp1`

When multiple Performance Management programs are installed on a single logical host, the programs share the same directory on the shared disk.

For details about how much shared disk capacity is needed, see *A. Estimating System Requirements*.

(3) Cautionary notes on failing over a logical host with PFM - RM for Oracle

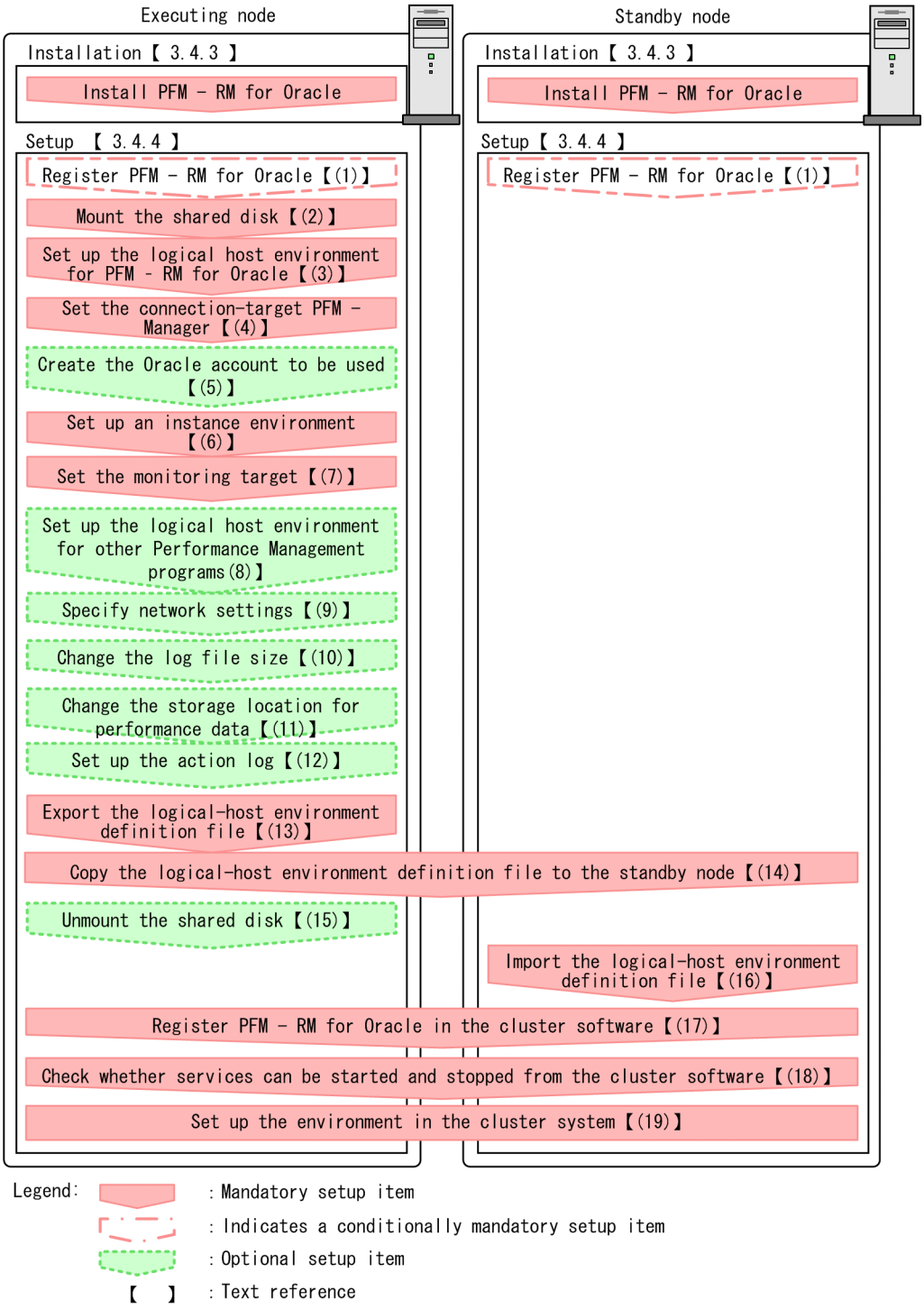
In a system configuration in which PFM - RM for Oracle runs on a logical host, consider whether you want the entire logical host to fail over when an error occurs in PFM - RM for Oracle.

If the entire logical host is failed over when an error occurs in PFM - RM for Oracle, business applications on the logical host will also be failed over. Failover of these applications may affect any business operations that are in progress.

3.4.2 Installation and setup workflow (UNIX)

The following figure shows the workflow for installing and setting up PFM - RM for Oracle to run on a logical host in a cluster system.

Figure 3–7: Workflow for installing and setting up PFM - RM for Oracle to run on a logical host in a cluster system (UNIX)



Note:

When you set up PFM - RM for Oracle in a logical host environment, it does not inherit definition information from any instances of PFM - RM for Oracle that may be in the physical host environment. In both physical and logical host environments, a new environment is created only when an instance environment is set up.

Note that you can select whether to execute a setup command requiring user entry interactively or non-interactively.

If you execute a setup command interactively, you need to enter a value in accordance with command directives.

If you execute a setup command non-interactively, user entry is not required because the operator entry required during command execution can be replaced by the specification of options or definition files. Also, batch processing or remote execution can automate setup operations to reduce administrator workload and operating costs. Non-interactive commands are useful in the following cases:

- You want to regularly change the password to be used for connection with the monitoring target.
- You want to improve operational efficiency when adding multiple monitoring targets.

For details about commands, see the manual *JP1/Performance Management Reference*.

3.4.3 Installation procedure (UNIX)

Install PFM - RM for Oracle on the executing node and the standby node.

> **Important**
>
> You must install PFM - RM for Oracle on a local disk. Do not install it on a shared disk.

The installation procedure is the same as the installation procedure in a non-cluster system. For details, see *2.2.3 Installation procedure (UNIX)*.

3.4.4 Setup procedure (UNIX)

This subsection describes how to set up Performance Management to run in a cluster system.

Setup must be performed first on the executing node and then on the standby node.

Executing indicates a task to be performed on the executing node. Standby indicates a task to be performed on the standby node. Option indicates a setup item that is required depending on the environment or an optional setup item used when the default is to be changed.

> **Important**
>
> Because the `JPC_HOSTNAME` environment variable is used by Performance Management, do not set this environment variable elsewhere in the system. Doing so could disrupt Performance Management operation.

(1) Register PFM - RM for Oracle Executing Standby Option

To perform integrated management of PFM - RM for Oracle using PFM - Manager and PFM - Web Console, you must register PFM - RM for Oracle with PFM - Manager and PFM - Web Console.

The conditions and procedure for registering PFM - RM for Oracle are the same as when a cluster system is not used. For details about the conditions and procedure for registering PFM - RM for Oracle, see *2.2.4(2) Register PFM - RM for Oracle*.

(2) Mount the shared disk Executing

Make sure that the shared disk is mounted. If the shared disk is not mounted, use the cluster software or the volume manager to mount it.

(3) Set up the logical host environment for PFM - RM for Oracle Executing

Execute the `jpcconf ha setup` command to set up the logical host environment. When you execute the command, the necessary files are copied to the shared disk, the logical host definition is set up, and the logical host environment is created.

Note:

Before you execute the command, stop all Performance Management programs and services throughout the Performance Management system. For details about how to stop services, see the chapter on operating Performance Management in the *JP1/Performance Management User's Guide*.

To set up the logical host environment:

1. Execute the `jpcconf ha setup` command to create the logical host environment for PFM - RM for Oracle.

   Execute the command as follows:

   ```
   jpcconf ha setup -key RMOracle -lhost jp1-halora -d /jp1
   ```

   Use the `-lhost` option to specify the logical host name. In the example above, the logical host name is `jp1-halora`. For DNS operation, specify a logical host name with the domain name portion removed.

   Specify the name of the shared disk directory as the environment directory name of the `-d` option. For example, if you specify `-d /jp1`, the directory `/jp1/jp1pc` is created, and the files for the logical host environment are created in that directory.

   Note:

   PFM - RM for Oracle runs on file systems. Specify a file system for the shared disk.

2. Execute the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Confirm that the logical host environment you created has been set up correctly.

(4) Set the connection-target PFM - Manager Executing

Execute the `jpcmgrhost define` command to specify which PFM - Manager is to manage PFM - RM for Oracle.

1. Execute the `jpcconf mgrhost define` command to set the connection-target PFM - Manager.

   Execute the command as follows:

   ```
   jpcconf mgrhost define -host jp1-hal -lhost jp1-halora
   ```

   Use the `-host` option to specify the host name of the connection-target PFM - Manager. If that PFM - Manager is running in a logical host environment, specify the logical host name of the PFM - Manager in the `-host` option. In the example above, the logical host name of PFM - Manager is `jp1-hal`.

   Use the `-lhost` option to specify the logical host name of PFM - RM for Oracle. In the example above, the logical host name of PFM - RM for Oracle is `jp1-halora`.

Although an example of interactive command execution is shown here, the `jpcconf mgrhost define` command can be also executed non-interactively. For details about the `jpcconf mgrhost define` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

(5) Create an Oracle account to be used Executing Option

Create an Oracle account that has specific system privileges to collect performance data for the Oracle Database monitored by PFM - RM for Oracle.

For details about how to create an Oracle account, see *2.2.4(3) Create an Oracle account to be used in PFM - RM for Oracle*.

This setup task is unnecessary when you use the `sys` account.

(6) Set up an instance environment Executing

You execute the `jpcconf inst setup` command to set up an instance environment for PFM - RM for Oracle.

The setup procedure is the same as the setup procedure in a non-cluster system, except that, in a cluster system, you must specify the logical host name in the `-lhost` option when executing the `jpcconf inst setup` command.

In a cluster system, the `jpcconf inst setup` command is executed in the following format:

```
jpcconf inst setup -key RMOracle -lhost logical-host-name -inst instance-nam
e
```

Although an example of interactive command execution is shown here, the `jpcconf inst setup` command can be also executed non-interactively. For details about the `jpcconf inst setup` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

As the agent log output folder (the value of `log_path`), specify the path of a folder that is on the shared disk.

For details about other settings and procedures, see *2.2.4(4) Set up an instance environment*.

(7) Set the monitoring target Executing

Execute `jpcconf target setup` command to specify which Oracle host for PFM - RM for Oracle to monitor.

The setup procedure is the same as the setup procedure in a non-cluster system, except that, in a cluster system, you must specify the logical host name in the `-lhost` option when executing the `jpcconf tatget setup` command.

In a cluster system, the `jpcconf target setup` command is executed in the following format:

```
jpcconf target setup -key RMOracle -inst instance-name -target monitoring-ta
rget-name -lhost logical-host-name
```

Although an example of interactive command execution is shown here, the `jpcconf target setup` command can be also executed non-interactively. For details about the `jpcconf target setup` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

For details about other settings and procedures, see *2.2.4(4)(b) Set the monitoring target*.

(8) Set up the logical host environment for other Performance Management programs

Executing | Option

At this point, set up any other Performance Management programs, such as PFM - Manager or PFM - RM, on the same logical host.

For details about how to set up these products, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*, and the chapter on operation in a cluster system in the manuals for the applicable version of PFM - RM.

(9) Specify network settings

Executing | Option

This setup task is necessary only when you change the network settings to match the configuration in which Performance Management is used.

The following are the two network setting items:

- IP addresses

  To specify the IP address used by Performance Management in a network environment where multiple LANs are connected, directly edit the contents of the `jpchosts` file.

  After editing the file, copy it from the executing node to the standby node.

  For details about how to set IP addresses, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide.*

- Port numbers

  If Performance Management programs will communicate with each other through a firewall, use the `jpcconf port` command to set the port numbers.

  For details about how to set port numbers, see the chapter on installation and setup and the chapters on setup and operation in a cluster system in the *JP1/Performance Management Planning and Configuration Guide.*

(10) Change the size of log files

Executing | Option

The operating status of Performance Management is output to a log file unique to Performance Management. This log file is called the common message log. This setting is required only when you wish to change this file size.

For details, see the chapter that describes installation and setup in the *JP1/Performance Management Planning and Configuration Guide.*

(11) Change the storage location of performance data

Executing | Option

Perform this setting only if you want to change the folders where the database of performance data managed by PFM - RM for Oracle is saved, backed up, exported, or imported.

For details, see *2.6.1 Changing the storage location of performance data*.

(12) Setting up the action log

Executing | Option

This setting is required to output action log when alarm occur. The action log stores history information that is output in conjunction with the alarms for thresholds related to system load and other conditions.

For details about how to set up the action log, see *K. Outputting Action Log Information*.

(13) Export the logical-host environment definition file Executing

Once you have created the logical host environment for PFM - RM for Oracle, export the environment definition as a file. In the export process, a file containing the collective definition information for all Performance Management programs set up on that logical host is output. Export the environment definition only after you have set up all additional Performance Management programs on the logical host.

To export the environment definition of the logical host:

1. Execute the `jpcconf ha export` command to export the environment definition of the logical host.

   The definition information for the logical host environment you created is output to an export file. You can give this file any name you wish.

   For example, execute the command as follows to output the logical host environment definition to the file `lhostexp.txt`:

   ```
   jpcconf ha export -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha export` command can be also executed non-interactively. For details about the `jpcconf ha export` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

(14) Copy the logical-host environment definition file to the standby node

Executing Standby

Copy the file you exported in *(13) Export the logical-host environment definition file* from the executing node to the standby node.

(15) Unmount the shared disk Executing Option

Complete setup by unmounting the file system. Note that if you intend to continue using the shared disk, you do not need to unmount the file system at this point.

Note:

Check whether the `jp1pc` directory and the files for the logical host environment exist on the local disk in the environment directory of the logical host that you set up. If they exist, this indicates that setup was performed without mounting the shared disk. In this case, take the following action:

1. Using the `tar` command, archive the `jp1pc` directory in the environment directory on the local disk.
2. Mount the shared disk.
3. If the environment directory you specified does not exist on the shared disk, create it now.
4. Extract the `tar` file into the environment directory on the shared disk.
5. Unmount the shared disk.
6. Delete the `jp1pc` directory and its contents from the environment directory on the local disk.

(16) Import the logical-host environment definition file Standby

On the standby node, import the exported file you copied from the executing node.

Use the `jpcconf ha import` command to set up the environment definition for the Performance Management programs of the logical host that you created on the executing node so that they to run on the standby node. If more than

one Performance Management program was installed on the logical host, the definition information for all of the programs is imported in batch form.

Note that the shared disk does not need to be online when you execute this command.

To import the logical-host environment definition file:

1. Execute the `jpcconf ha import` command to import the environment definition of the logical host.

   Execute the command as follows:

   ```
   jpcconf ha import -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha import` command can be also executed non-interactively. For details about the `jpcconf ha import` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

   When you execute the command, the settings on the standby node are changed to reflect the environment described in the export file. This sets up the standby node to run PFM - RM for Oracle as a logical host.

   If you used the `jpcconf port` command to assign fixed port numbers during setup, the same port numbers will take effect on the standby node.

2. Execute the `jpcconf ha list` command to check whether the logical host is set up correctly.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Check whether the same output is displayed as when you executed `jpcconf ha list` on the executing node.

(17) Register PFM - RM for Oracle in the cluster software Executing Standby

If you intend to use Performance Management programs in a logical host environment, make sure that the programs are registered in the cluster software. Also, set up the environment so that the Performance Management programs are started and stopped based on instructions from the cluster software.

This subsection describes the settings to be specified to register PFM - RM for Oracle in the cluster software.

In UNIX, you will typically need to register control methods for *Start*, *Stop*, *Process monitoring*, and *Forced stop* in the cluster software.

The following table shows how to set these control methods for PFM - RM for Oracle.

Table 3–5: Control methods for PFM - RM for Oracle registered in the cluster software

Item	Description

Start	Start PFM - RM for Oracle by executing the following commands:
	`/opt/jp1pc/tools/jpcspm start -key AH -lhost logical-host-name`
	`/opt/jp1pc/tools/jpcspm start -key RMOracle -lhost logical-host-name -inst instance-name`
	Start PFM - RM for Oracle after the shared disk and the logical IP address have been made usable.

Stop	Stop PFM - RM for Oracle by executing the following commands:
	`/opt/jp1pc/tools/jpcspm stop -key RMOracle -lhost logical-host-name -inst instance-name`
	`/opt/jp1pc/tools/jpcspm stop -key AH -lhost logical-host-name`
	Stop PFM - RM for Oracle before the shared disk and the logical IP address are made unusable.

Item	Description
Stop	If the service has stopped due to a failure, the `jpcspm stop` command returns `3`. In this case, assume that the command terminated normally, because the service has stopped. For cluster software that evaluates the execution result from a return value, convert the return value to `0`, for example.

Process monitoring	Use the `ps` command to check whether the monitored processes are running:
	`ps -ef | grep "`*process-name logical-host-name*`" | grep -v "grep `*monitored-process*`"`
	Monitored processes are as follows:
	• `jpcagt1`
	• `agt1/jpcsto`
	• `jpcah`
	For each of these processes, execute the following command:
	• For `jpcagt1`
	`ps -ef | grep "jpcagt1_`*instance-name logical-host-name*`" | grep -v "grep jpcagt1"`
	• For `agt1/jpcsto`
	`ps -ef | grep "agt1/jpcsto_`*instance-name logical-host-name*`" | grep -v "grep agt1/jpcsto"`
	• For `jpcah`
	`ps -ef | grep "jpcah `*logical-host-name*`" | grep -v "grep jpcah"`
	Hitachi also recommends that you provide a control method that allows the cluster software to temporarily stop monitoring. This can be used when temporarily stopping Performance Management, for example, during system maintenance (thereby stopping the cluster software from monitoring files that are undergoing maintenance).

Forced stop	To perform a forced stop, execute the following command: `/opt/jp1pc/tools/jpcspm stop -key all -lhost `*logical-host-name*` -kill immediate` As the service key of the first argument, you can specify only `all`. Note: Execution of this command forcibly stops all Performance Management processes in the specified logical host environment by sending a `SIGKILL` signal to the processes. That is, the Performance Management system is stopped at the logical host level, not at the individual service level. Set up the cluster software to only perform a forced stop if a normal stop fails.

Notes:

- Because Performance Management programs that are to be registered in the cluster software must be started and stopped based on instructions from the cluster software, do not set them up to start automatically when the OS starts.
- If the cluster software evaluates execution results on the basis of the return value, set up the Performance Management programs to convert their command return values to values the cluster software expects. For the command return values of Performance Management programs, see the explanation of the command.
- If you use the `ps` command to monitor operations, check in advance the outputs of the `ps` command. The command outputs PFM - RM for Oracle processes as the concatenations of the logical host name and the monitoring instance names. Make sure that the displayed PFM - RM for Oracle processes are not truncated. If any one of the displayed PFM - RM for Oracle processes is truncated, then shorten the instance names so that the displayed processes are no longer truncated.

  In addition, when using the `ps` command to identify the process name and logical host name, if you use `( )` (parentheses) or `[ ]` (square brackets), the process name and logical host name might not be acquired. If this happens, check the `ps` command reference of the OS, and then execute the command again.

- Start PFM - RM for Oracle after starting Oracle, and stop it before stopping Oracle.

(18) Check whether services can be started and stopped from the cluster software Executing Standby

Check whether the cluster software is operating correctly by using it to issue start and stop requests to Performance Management programs on each node.

(19) Set up the environment in the cluster system Executing Standby

After setting up the Performance Management programs, use PFM - Web Console to set up the environment for the programs. You will then be able to display reports on the operating status of monitoring targets, and notify users whenever a problem occurs.

For details about setting up the environment for Performance Management programs, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*.

3.5 Setup cancellation and uninstallation (Windows)

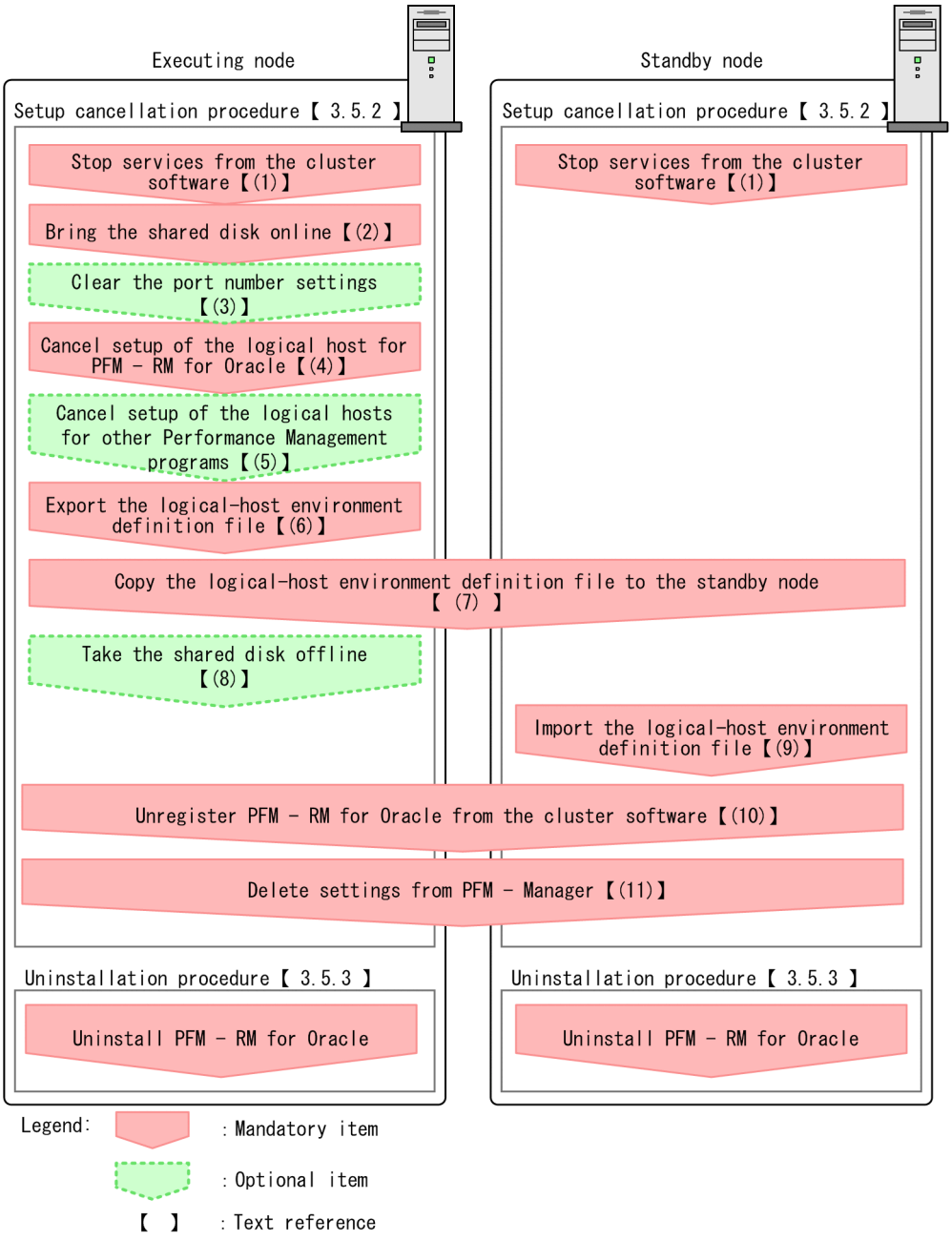
This section describes how to cancel setup of PFM - RM for Oracle and how to uninstall PFM - RM for Oracle in a cluster system.

For details about how to cancel setup of PFM - Manager and how to uninstall PFM - Manager, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*.

3.5.1 Setup cancellation and uninstallation workflow of PFM - RM for Oracle (Windows)

The following figure shows the setup cancellation and uninstallation workflow of PFM - RM for Oracle in a cluster system.

Figure 3–8: Setup cancellation and uninstallation workflow of PFM - RM for Oracle running on a logical host in a cluster system (Windows)



3.5.2 Setup cancellation procedure (Windows)

This section describes the procedure for canceling setup of the logical host environment. There are separate procedures for the executing node and the standby node. Cancellation of setup must be performed first on the executing node and then on the standby node.

Executing indicates a task to be performed on the executing node. Standby indicates a task to be performed on the standby node. Option indicates a setup item that is required depending on the environment or an optional setup item used when the default is to be changed.

The following subsections describe how to cancel setup of PFM - RM for Oracle.

(1) Stop services from the cluster software Executing Standby

Stop all the Performance Management programs and services running on the executing and standby nodes by using instructions from the cluster system. For details about how to stop the programs and services, see the documentation for your cluster software.

(2) Bring the shared disk online Executing

Make sure that the shared disk is online. If the shared disk is not online, use the cluster software or the volume manager to bring it online.

(3) Clear the port number settings Executing Option

Perform this step only if you are running a firewall environment, and you used the `jpcconf port` command to set port numbers during setup.

For details about how to clear the port number settings, see the chapter on installation and setup and the chapters on setup and operation in a cluster system in the *JP1/Performance Management Planning and Configuration Guide.*

(4) Canceling setup of the logical host environment for the executing node Executing

The following procedure shows how to cancel setup of the logical host environment for the executing node.

Note:

If the shared disk is not mounted when you delete the logical host environment, the logical host settings are deleted from the physical host only, and the directories and files on the shared disk will remain. In this case, bring the shared disk online, and then manually delete the `jp1pc` directory from the environment directory.

To cancel setup of the logical host environment for the executing node:

1. Execute the `jpcconf ha list` command to check the logical host settings.
   Execute the command as follows:

   ```
   jpcconf ha list -key all -lhost jp1-halora
   ```

   Before canceling setup of the logical host environment, check the current settings, including the logical host name and the path to the shared disk.

2. Execute the `jpcconf target unsetup command to clear the monitoring host setting`
   Execute the command as follows:

   ```
   jpcconf target unsetup -key RMOracle -inst SDC1 -target monitoring-target-name -lhost jp1-halora
   ```

   When you execute `jpcconf target unsetup command, the monitoring host is no longer monitored.`

3. Clear the instance environment setting of PFM - RM for Oracle
   Execute the command as follows:

   ```
   jpcconf inst unsetup -key RMOracle -lhost jp1-halora -inst SDC1
   ```

Although an example of interactive command execution is shown here, the `jpcconf inst unsetup` command can be also executed non-interactively. For details about the `jpcconf inst unsetup` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

When you execute the `jpcconf inst unsetup command, the settings that allow the instance to start on the logical host are deleted. The files on the shared disk that relate to the logical host are also deleted.`

4. Execute the `jpcconf ha unsetup` command to delete the logical host environment for PFM - RM for Oracle.

   Execute the command as follows:

   ```
   jpcconf ha unsetup -key RMOracle -lhost jp1-halora
   ```

   When you execute the `jpcconf ha unsetup` command, the settings that allow the instance to start on the logical host are deleted. Files on the shared disk that relate to the logical host are also deleted.

5. Use the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Confirm that PFM - RM for Oracle has been deleted from the logical host environment.

6. Delete objects from the Oracle Database.

   Delete from Oracle the objects that PFM - RM for Oracle requires to monitor Oracle (monitoring procedures, work tables, etc.). To delete these objects, use the SQL deletion script that PFM - RM for Oracle provides. For details about how to delete objects from the Oracle Database, see *2.3.2(1)(c) Deleting the objects registered in the Oracle Database*.

7. Restore the Oracle initialization parameter to its original setting.

   If you have changed the value of the Oracle initialization parameter `TIMED_STATISTICS` for collecting records of PFM - RM for Oracle, restore it to its original setting if necessary.

8. Delete the Oracle accounts and the tablespaces used by the accounts.

   Delete the Oracle accounts that have become unnecessary for PFM - RM for Oracle. If the tablespaces that were used by deleted accounts are unnecessary, also delete the tablespaces.

   For details about how to delete Oracle accounts, see *2.3.2(2) Deleting an Oracle account used in PFM - RM for Oracle*.

(5) Cancel setup of the logical host environments for other Performance Management programs

Executing | Option

If there are Performance Management programs for which you want to cancel setup in addition to PFM - RM for Oracle on the same logical host, cancel setup of these at this point.

For details about how to cancel setup, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*, or the chapters on operation in a cluster system in the applicable PFM - RM manual.

(6) Export the logical-host environment definition file

Executing

After you have deleted PFM - RM for Oracle from the logical host, export the environment definition as a file.

Performance Management allows you to synchronize the environments on the executing node and standby node by exporting the environment definition from one node and importing it into the other.

When you import the environment definition (without the Performance Management component) from the executing node into the standby node, the imported environment definition is compared with the existing environment definition (containing the Performance Management component) and the difference between the two is verified. The Performance Management environment definition is then cleared from the standby node so that both nodes have the same environment.

To export the logical-host environment definition file:

1. Execute the `jpcconf ha export` command to export the logical host environment definition.

   The definition information for the logical host environment of Performance Management is output to an export file. You can give this file any name you wish.

   For example, execute the command as follows to output the logical host environment definition to the file `lhostexp.txt`:

   ```
   jpcconf ha export -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha export` command can be also executed non-interactively. For details about the `jpcconf ha export` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

(7) Copy the logical-host environment definition file to the standby node

Executing Standby

Copy the file you exported in *(6) Export the logical-host environment definition file* from the executing node to the standby node.

(8) Take the shared disk offline Executing Option

Use the cluster software or the volume manager to take the shared disk offline. Note that if you intend to continue using the shared disk, you do not need to take it offline at this point.

(9) Import the logical-host environment definition file Standby

On the standby node, import the exported file you copied from the executing node in order to synchronize the environment definitions of both nodes. You do not need to take the shared disk offline on the standby node before importing the file. Note that the shared disk does not need to be offline when you execute this command.

To import the logical-host environment definition file:

1. Execute the `jpcconf ha import` command to import the environment definition of the logical host.

   Execute the command as follows:

   ```
   jpcconf ha import -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha import` command can be also executed non-interactively. For details about the `jpcconf ha import` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

   When you execute the command, the environment on the standby node is changed to reflect the environment described in the export file. This clears the settings that allow PFM - RM for Oracle to start on the logical host. These settings are also cleared for any other Performance Management programs for which you cancel setup on the logical host.

   If you used the `jpcconf port` command during setup to assign fixed port numbers, the port numbers will no longer be assigned.

2. Execute the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Confirm whether the same output is displayed as when you executed the `jpcconf ha list` command on the executing node.

(10) Unregister PFM - RM for Oracle in the cluster software Executing Standby

Delete the settings related to PFM - RM for Oracle on the logical host from the cluster software.

For details about deleting these settings, see the documentation for your cluster software.

(11) Delete settings from PFM - Manager Executing Standby

Log in to PFM - Manager from PFM - Web Console, and delete the definition relating to the PFM - RM for Oracle for which you want to cancel setup.

To delete the definition:

1. Start the PFM - Manager service.

   If you have stopped the PFM - Manager services from the cluster software as described in *(1) Stop services from the cluster software*, use the cluster software to start the PFM - Manager services. For details about how to start the services, see the cluster software documentation.

2. From PFM - Web Console, delete the agent.

3. Delete the agent information in PFM - Manager.

   For example, if PFM - Manager is running on the logical host `jp1-hal`, and PFM - RM for Oracle is running on the logical host `jp1-halora`, execute the following command to delete the agent:

   ```
   jpctool service delete -id service-ID -host jp1-halora  -lhost jp1-hal
   ```

   In *service-ID*, specify the service ID of the agent you want to delete.

4. Restart the PFM - Manager service.

   For details about how to start services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

5. Apply the service information of the PFM - Manager host.

   In order to update the PFM - Web Console host to reflect the deletion of service information, synchronize the agent information of the PFM - Manager host and that of the PFM - Web Console host. Use the `jpctool service sync` command to synchronize the agent information.

3.5.3 Uninstallation procedure (Windows)

Uninstall PFM - RM for Oracle from the executing and standby nodes.

The uninstallation procedure is the same as the uninstallation procedure in a non-cluster system. For details, see *2.3.3 Procedure for uninstallation (Windows)*.

Notes:

- Before you uninstall PFM - RM for Oracle, stop all Performance Management programs and services on the node from which you are uninstalling PFM - RM for Oracle.
- If you uninstalled PFM - RM for Oracle without deleting the logical host environment, the environment directory may remain on the disk. In this case, delete the environment directory manually.

3.6 Setup cancellation and uninstallation (UNIX)

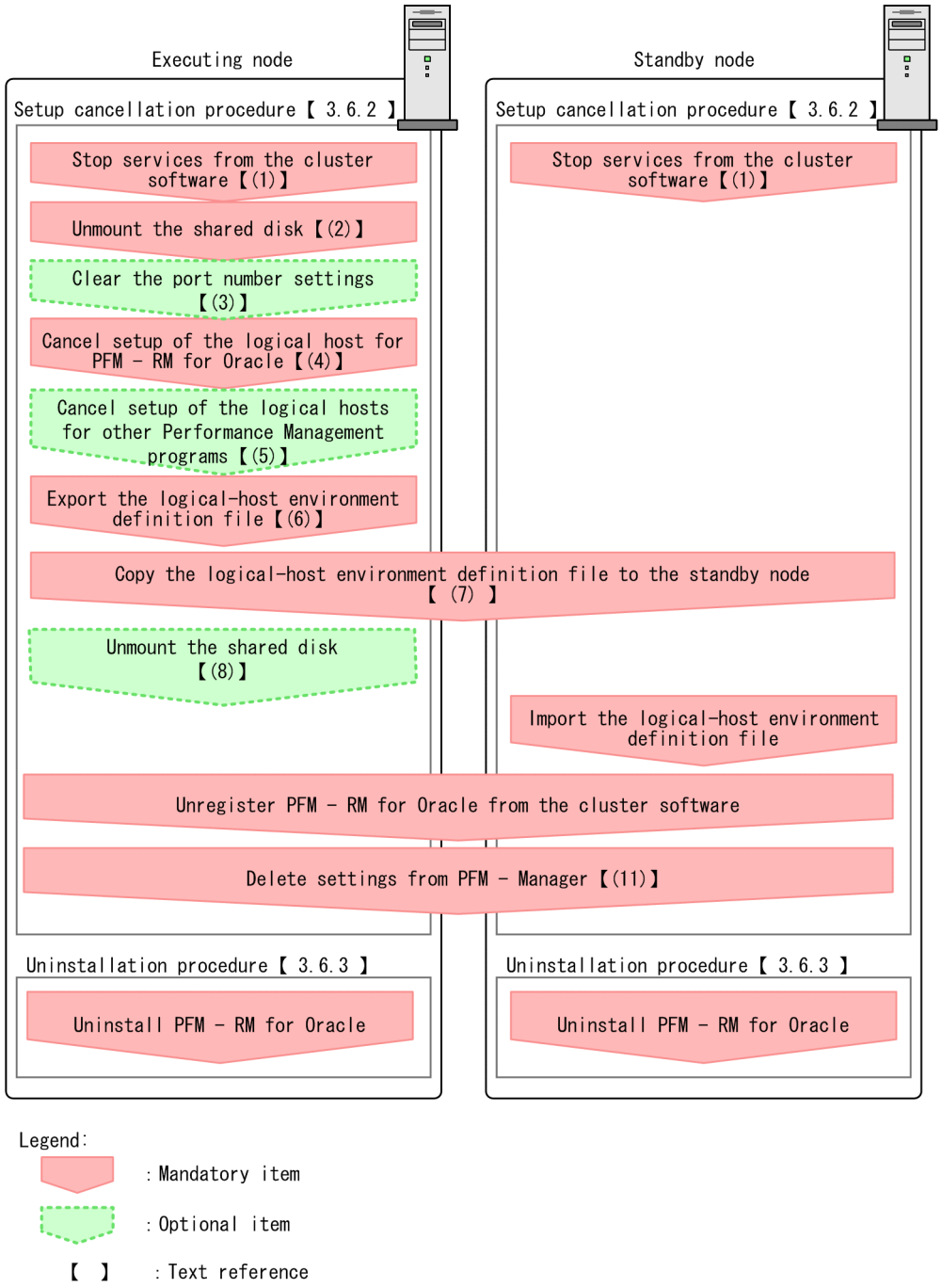
This section describes how to cancel setup of PFM - RM for Oracle and how to uninstall PFM - RM for Oracle in a cluster system.

For details about how to cancel setup of PFM - Manager and how to uninstall PFM - Manager, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*.

3.6.1 Setup cancellation and uninstallation workflow of PFM - RM for Oracle (UNIX)

The following figure shows the setup cancellation and uninstallation workflow of PFM - RM for Oracle in a cluster system.

Figure 3–9: Setup cancellation and uninstallation workflow of PFM - RM for Oracle running on a logical host in a cluster system (UNIX)



3.6.2 Setup cancellation procedure (UNIX)

This section describes the procedure for canceling setup of the logical host environment. There are separate procedures for the executing node and the standby node. Cancellation of setup must be performed first on the executing node and then on the standby node.

Executing indicates a task to be performed on the executing node. Standby indicates a task to be performed on the standby node. Option indicates a setup item that is required depending on the environment or an optional setup item used when the default is to be changed.

The following subsections describe how to cancel setup of PFM - RM for Oracle.

(1) Stop services from the cluster software Executing Standby

Stop all the Performance Management programs and services running on the executing and standby nodes by using instructions from the cluster system. For details about how to stop the programs and services, see the documentation for your cluster software.

(2) Mount the shared disk Executing

Make sure that the shared disk is mounted. If the shared disk is not mounted, mount it using the cluster software or the volume manager.

Note:

Check whether the `jp1pc` directory and the files for the logical host environment exist on the local disk in the environment directory of the logical host for which you are canceling setup. If they exist, this indicates that setup was performed without mounting the shared disk. In this case, take the following action:

1. On the local disk, use the `tar` command to archive the `jp1pc` directory in the environment directory of the logical host for which you are canceling setup.
2. Mount the shared disk.
3. If the environment directory for the logical host for which you are canceling setup does not exist on the shared disk, create it now.
4. On the shared disk, expand the `tar` file into the environment directory for which you are canceling setup.
5. Unmount the shared disk.
6. On the local disk, delete the `jp1pc` directory and its contents from the environment directory of the logical host.

(3) Clear the port number settings Executing Option

Perform this step only if you are running a firewall environment, and you used the `jpcconf port` command to set port numbers during setup.

For details about how to clear the port number settings, see the chapter on installation and setup and the chapters on setup and operation in a cluster system in the *JP1/Performance Management Planning and Configuration Guide.*

(4) Canceling setup of the logical host environment for PFM - RM for Oracle Executing

The following procedure shows how to cancel setup of the logical host environment for PFM - RM.

Note:

If the shared disk is not mounted when you delete the logical host environment, the logical host settings are deleted from the physical host only, and the directories and files on the shared disk will remain. In this case, bring the shared disk online, and then manually delete the `jp1pc` directory from the environment directory.

1. Execute the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all -lhost jp1-halora
   ```

   Before canceling setup of the logical host environment, check the current settings, including the logical host name and the path to the shared disk.

2. Execute the `jpcconf target unsetup command to clear the monitoring host setting`

   Execute the command as follows:

   ```
   jpcconf target unsetup -key RMOracle -inst SDC1 -target monitoring-target-name -lhost jp1-halora
   ```

   When you execute `jpcconf target unsetup command, the monitoring host is no longer monitored.`

3. Clear the instance environment setting of PFM - RM for Oracle

   Execute the command as follows:

   ```
   jpcconf inst unsetup -key RMOracle -lhost jp1-halora -inst SDC1
   ```

   Although an example of interactive command execution is shown here, the `jpcconf inst unsetup` command can be also executed non-interactively. For details about the `jpcconf inst unsetup` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

   When you execute the `jpcconf inst unsetup command, the settings that allow the instance to start on the logical host are deleted. The files on the shared disk that relate to the logical host are also deleted.`

4. Execute the `jpcconf ha unsetup` command to delete the logical host environment for PFM - RM for Oracle.

   Execute the command as follows:

   ```
   jpcconf ha unsetup -key RMOracle -lhost jp1-halora
   ```

   When you execute the `jpcconf ha unsetup` command, the settings that allow PFM - RM for Oracle to start on the logical host are deleted. Files on the shared disk that relate to the logical host are also deleted.

5. Use the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Confirm that PFM - RM for Oracle has been deleted from the logical host environment.

6. Delete objects from the Oracle Database.

   Delete from Oracle the objects that PFM - RM for Oracle requires to monitor Oracle (monitoring procedures, work tables, etc.). To delete these objects, use the SQL deletion script that PFM - RM for Oracle provides. For details about how to delete objects from the Oracle Database, see *2.4.2(1)(c) Deleting the objects registered in the Oracle Database*.

7. Restore the Oracle initialization parameter to its original setting.

   If you have changed the value of the Oracle initialization parameter `TIMED_STATISTICS` for collecting records of PFM - RM for Oracle, restore it to its original setting if necessary.

8. Delete the Oracle accounts and the tablespaces used by the accounts.

Delete the Oracle accounts that have become unnecessary for PFM - RM for Oracle. If the tablespaces that were used by deleted accounts are unnecessary, also delete the tablespaces.

For details about how to delete Oracle accounts, see *2.4.2(2) Deleting an Oracle account used in PFM - RM for Oracle*.

(5) Cancel setup of the logical host environments for other Performance Management programs

Executing | Option

If there are Performance Management programs for which you want to cancel setup in addition to PFM - RM for Oracle on the same logical host, cancel setup of these at this point.

For details about how to cancel setup, see the chapters on setup and operation in a cluster system in the *JP1/Performance Management User's Guide*, or the chapters on operation in a cluster system in the applicable PFM - RM manual.

(6) Export the logical-host environment definition file

Executing

After you have deleted PFM - RM for Oracle from the logical host, export the environment definition as a file.

Performance Management allows you to synchronize the environments on the executing node and standby node by exporting the environment definition from one node and importing it into the other.

When you import the environment definition (without the Performance Management component) from the executing node into the standby node, the imported environment definition is compared with the existing environment definition (containing the Performance Management component) and the difference between the two is verified. The Performance Management environment definition is then cleared from the standby node so that both nodes have the same environment.

To export the logical-host environment definition file:

1. Execute the `jpcconf ha export` command to export the logical host environment definition.

   The definition information for the logical host environment of Performance Management is output to an export file. You can give this file any name you wish.

   For example, execute the command as follows to output the logical host environment definition to the file `lhostexp.txt`:

   ```
   jpcconf ha export -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha export` command can be also executed non-interactively. For details about the `jpcconf ha export` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

(7) Copy the logical-host environment definition file to the standby node

Executing | Standby

Copy the file you exported in *(6) Export the logical-host environment definition file* from the executing node to the standby node.

(8) Unmount the shared disk

Executing | Option

To complete the task, unmount the file system. Note that if you intend to continue using the shared disk, you do not need to unmount it this point.

(9) Import the logical-host environment definition file Standby

On the standby node, import the exported file you copied from the executing node in order to synchronize the environment definitions of both nodes. You do not need to unmount the shared disk on the standby node before importing the file.

To import the logical-host environment definition file:

1. Execute the `jpcconf ha import` command to import the environment definition of the logical host.

   Execute the command as follows:

   ```
   jpcconf ha import -f lhostexp.txt
   ```

   Although an example of interactive command execution is shown here, the `jpcconf ha import` command can be also executed non-interactively. For details about the `jpcconf ha import` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*.

   When you execute the command, the environment on the standby node is changed to reflect the environment described in the export file. This clears the settings that allow PFM - RM for Oracle to start on the logical host. These settings are also cleared for any other Performance Management programs for which you cancel setup on the logical host.

   If you used the `jpcconf port` command during setup to assign fixed port numbers, the port numbers will no longer be assigned.

2. Execute the `jpcconf ha list` command to check the logical host settings.

   Execute the command as follows:

   ```
   jpcconf ha list -key all
   ```

   Confirm whether the same output is displayed as when you executed the `jpcconf ha list` command on the executing node.

(10) Unregister PFM - RM for Oracle in the cluster software Executing Standby

Delete the settings related to PFM - RM for Oracle on the logical host from the cluster software.

For details about deleting these settings, see the documentation for your cluster software.

(11) Delete settings from PFM - Manager Executing Standby

Log in to PFM - Manager from PFM - Web Console, and delete the definition relating to the PFM - RM for Oracle for which you want to cancel setup.

To delete the definition:

1. Start the PFM - Manager service.

   If you have stopped the PFM - Manager services from the cluster software as described in *(1) Stop services from the cluster software*, use the cluster software to start the PFM - Manager services. For details about how to start the services, see the cluster software documentation.

2. From PFM - Web Console, delete the agent.

3. Delete the agent information in PFM - Manager.

For example, if PFM - Manager is running on the logical host `jp1-hal`, and PFM - RM for Oracle is running on the logical host `jp1-halora`, execute the following command to delete the agent:

```
jpctool service delete -id service-ID -host jp1-halora -lhost jp1-hal
```

In *service-ID*, specify the service ID of the agent you want to delete.

4. Restart the PFM - Manager service.
   For details about how to start services, see the chapter on starting and stopping Performance Management in the *JP1/Performance Management User's Guide*.

5. Apply the service information of the PFM - Manager host.
   In order to update the PFM - Web Console host to reflect the deletion of service information, synchronize the agent information of the PFM - Manager host and that of the PFM - Web Console host. Use the `jpctool service sync` command to synchronize the agent information.

3.6.3 Uninstallation procedure (UNIX)

Uninstall PFM - RM for Oracle from the executing and standby nodes.

The uninstallation procedure is the same as the uninstallation procedure in a non-cluster system. For details, see *2.4.3 Procedure for uninstallation (UNIX)*.

Notes:

- Before you uninstall PFM - RM for Oracle, stop all Performance Management programs and services on the node from which you are uninstalling PFM - RM for Oracle.
- If you uninstalled PFM - RM for Oracle without deleting the logical host environment, the environment directory may remain on the disk. In this case, delete the environment directory manually.

3.7 Changing the operation of PFM - RM for Oracle

This section describes how to change the operation of PFM - RM for Oracle in a cluster system.

3.7.1 Updating a monitoring target

When you update a monitoring target, you first check the logical host name, the instance name, and the monitoring target name. You update a monitoring target host on the executing node.

Before you change an information item, see *2.6.2 Updating a monitoring target* in advance.

Use the `jpcconf ha list` command to check the logical host name and the instance name. To check the monitoring target name, use the `jpcconf target list` command.

Use the `jpcconf tartget setup` command to update a monitoring target name.

Updating a monitoring target host involves the steps described below. To update multiple monitoring target hosts, repeat the procedure for each monitoring target host.

1. Check the monitoring target name

   Execute the `jpcconf target list` command specified with the service key and the instance name that indicate the PFM - RM for Oracle whose monitoring target you are going to update.

   ```
   jpcconf target list -key RMOracle -inst instance-name -lhost logical-host-
   name
   Targets:
   targethost1
   targethost2
   Groups:
   All
   ```

2. Execute the `jpcconf target setup` command specified with the service key, the instance name, and the monitoring target name that indicate the PFM - RM for Oracle whose monitoring target host you are going to update.

   For example, if you update the monitoring target whose monitoring target name is targethost1, execute the following command:

   ```
   jpcconf target setup -key RMOracle -inst instance-name -target targethost1
   ```

3. Update the monitoring target host of PFM - RM for Oracle.

   Enter the information shown in the *Table 2-28* in accordance with the command's instructions. The current settings are displayed. To use the displayed value, press the Enter key. When you have finished entering the information, the monitoring target is updated.

For details about the commands used in this procedure, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

3.7.2 Updating an instance environment

When you update an instance environment in a cluster system, you first check the logical host name and the name of the instance that you want to update. You update the instance information on the executing node.

Before you change an information item, see the sections below in advance:

- Windows: *2.6.3(1) Windows*
- UNIX: *2.6.3(2) UNIX*

For details about Oracle instance information, see your Oracle documentation.

Use the `jpcconf ha list` command to check the instance name. To update an instance environment, use the `jpcconf inst setup` command.

Updating an instance environment involves the steps described below. To update multiple instance environments, repeat the procedure for each instance environment.

1. Check the logical host name and the instance name

   Execute the `jpcconf ha list` command specified with the service key that indicates the PFM - RM for Oracle in the instance environment that is to be updated:

   ```
   jpcconf ha list -key RMOracle
   ```

   For example, if you execute the command in the system with logical host name jp1_Ora and instance name Ora1, the command will list the following information:

   ```
   Logical Host Name     Key         Environment Directory      Instance Name
   jp1_Ora               RMOracle    Path to the logical host   Ora1
                                     environment directory
   ```

2. If the PFM - RM for Oracle service is active in the instance environment that is to be updated, use the cluster software to stop the service.

   For details about stopping the services, see the chapter on starting and stopping Performance Management in a cluster system in the *JP1/Performance Management User's Guide*.

3. If the shared disk is unmounted when you stop the service, use the cluster software or the volume manager to mount it.

4. Execute the `jpcconf inst setup` command specified with the service key and the instance name that indicate the PFM - RM for Oracle in the instance environment that is to be updated.

   For example, if you are updating the instance environment with logical host name jp1_Ora and instance name Ora1, execute the following command:

   ```
   jpcconf inst setup -key RMOracle -lhost jp1_Ora -inst Ora1
   ```

5. Update the instance information for Oracle.

   In Windows, enter the information shown in Table 2-29 in accordance with the command's instructions. In Unix, enter the information shown in Table 2-31 in accordance with the command's instructions. The current settings are displayed (except for the value of oracle_passwd). To use the displayed value, press the Enter key. When you have finished entering information, the instance environment is updated.

6. Use the cluster software to restart the service in the updated instance environment.

   For details about the starting the service, see the chapter on starting and stopping Performance Management in a cluster system in the *JP1/Performance Management User's Guide*.

Notes:

To change a user, use the following procedure:

1. Delete the objects created by the user you want to change.

2. Register new objects after you change the user.

Performance data is not deleted when a user is changed.

For details about how to delete objects, see the following sections:

Windows: see *2.3.2(1)(c) Deleting the objects registered in the Oracle Database*

UNIX: see *2.4.2(1)(c) Deleting the objects registered in the Oracle Database*

For details about how to register objects, see the following sections:

Windows: see *2.1.4(3)(c) Registering objects in the Oracle Database*

UNIX: see *2.2.4(4)(c) Registering objects in the Oracle Database*

For details about the commands used in this procedure, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

3.8 Notes on operating PFM - RM for Oracle in a cluster system

This section provides notes on operating PFM - RM for Oracle in a cluster system.

3.8.1 Host name in the collected performance data

The performance data PFM - RM for Oracle collects includes a record that contains fields related to the host name. In the case of PFM - RM for Oracle running on a logical host, the physical host name is stored in the indicated field of the record shown in the following table:

Record name	Field name	Stored host name	Description
Instance (PD_PDI)	Host	Physical host name	The name of the host on which the connected instance is running.
Collection Instance 2 (PD_PCI)	Host	Physical host name	The name of the host on which the connected instance is running.

3.8.2 Exporting and importing the logical-host environment definition file

You must export and import the logical-host environment definition file only if you perform any one of these operations listed below:

- When you set up the logical host environment or set up the instance environment, you change the node system on the logical host.

  For details about how to set up a logical host environment of PFM - RM for Oracle, see the following sections:

  - Windows: see *3.3.4(3) Set up the logical host environment for PFM - RM for Oracle*
  - UNIX: see *3.4.4(3) Set up the logical host environment for PFM - RM for Oracle*

  For details about how to set up an instance environment, see the sections below:

  - Windows: see *3.3.4(6) Set up an instance environment*
  - UNIX: see *3.4.4(6) Set up an instance environment*
- When you set up the logical host environment of other Performance Management programs, you perform an operation that requires exporting and importing the logical-host environment definition file.

  The following sections describe how to set up the logical host environment of other Performance Management programs:

  - Windows: see *3.3.4(8) Set up the logical host environment for other Performance Management programs*
  - UNIX: see *3.4.4(8) Set up the logical host environment for other Performance Management programs*
- When you specify network setting, you set the port numbers.

  For details about how to specify the network settings, see the sections below:

  - Windows: see *3.3.4(9) Specify network settings*
  - UNIX: see *3.4.4(9) Specify network settings*

The following sections describe how to export and import the logical-host environment definition file:

- Windows: From *3.3.4(13) Export the logical-host environment definition file* to *3.3.4(16) Import the logical-host environment definition file*

- UNIX: From *3.4.4(13) Export the logical-host environment definition file* to *3.4.4(16) Import the logical-host environment definition file*

Note that you do not have to export and import the logical-host environment definition file when you update a monitoring target host and/or an instance environment.

For details about how to update a monitoring target, see *3.7.1 Updating a monitoring target*. For details about how to update an instance environment, see *3.7.2 Updating an instance environment*.

4 Monitoring template

This chapter describes the monitoring template for PFM - RM for Oracle.

Overview of the monitoring template

The Performance Management products enable you to define alarms and reports by the following methods:

- Using the alarms and reports defined by PFM - RM for Oracle
- Copying and customizing the alarms and reports defined by PFM - RM for Oracle
- Using a wizard to define new information

A set of alarms and reports provided by PFM - RM for Oracle is called a *monitoring template*. Because the necessary information is predefined for the reports and alarms in the monitoring template, you can copy them in order to use the monitoring template as is or you can customize them as appropriate for your environment. This eliminates the need to use the wizard to create new definitions, thus simplifying the preparations for monitoring the operating status of desired programs.

This chapter describes the alarm and report settings in the monitoring template that have been defined by PFM - RM for Oracle.

For details about using the monitoring template, see the chapter on creating reports used for operation analysis or the chapter on alarm-based operation monitoring in the *JP1/Performance Management User's Guide*.

Format of alarm explanations

This section describes the format used to explain alarms. Alarms are presented in alphabetical order. The explanatory format for each alarm is as follows.

Alarm name

Indicates the name of the alarm name in the monitoring template.

Overview

Provides an overview of the programs that can be monitored by the alarm.

Main settings

Explains the main settings for this alarm in a tabular format. The alarm settings in the table correspond to the settings in the Properties window that appears when you click an alarm icon on the **Alarms** window of PFM - Web Console and then click the **Properties** method. For details about each alarm setting, see the Properties window for the particular alarm in PFM - Web Console.

Hyphens (--) in the *Setting* column of the table indicate that any value set for the item will be invalid.

If the abnormal condition is the same as the warning condition in a conditional expression, the system issues only the abnormal alarm event.

Related reports

Indicates the reports in the monitoring template that are associated with this alarm. You can view the reports by clicking an agent icon on the **Agents** window of PFM - Web Console, and then clicking the icon for the **Display Alarm Status** method.

List of alarms

An alarm table named `PFM RM Oracle Template Alarms 12.10` contains the alarms that are defined in the monitoring template for PFM - RM for Oracle (`12.10` indicates the version of the alarm table). The product for this alarm table is `RM Oracle (8.0)`. This alarm table is stored in the `RM Oracle` folder that is displayed on the **Alarms** window of PFM - Web Console. The following table lists the alarms defined in the monitoring template.

Note that if the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some records or fields collect the following performance data:

- Performance data for the PDBs and root container (`CDB$ROOT`) that are being monitored
- Performance data for all PDBs and common performance data for database instances

For details, see *5. List of records for PFM - RM for Oracle*.

Table 4–1: List of alarms

Alarm name	What is monitored
Buffer Cache Usage	Buffer cache usage ratio
Buffer Cache Waits	Contention for data in the database and rollback blocks
Dict. Cache Usage	Shared pool
Disk Sorts	Percentage of all sort operations executed on disk using memory and disk I/O operations
Free List Waits	Contention on free lists
Full Table Scans	Percentage of full table scans
Library Cache Usage	Library cache
Redo Log Contention	Occurrence frequency of wait events
Server Status	Availability of an Oracle instance.
Tablespace Usage	Available tablespace

Notes:

- Due to the sort performed by PFM - RM for Oracle, if you use the alarm table PFM RM Oracle Template Alarms MM.NN# provided by the monitoring template to perform monitoring, a Disk Sorts alarm may occur. If the error occurs, increase the value of the initial parameters SORT AREA SIZE and SORT AREA RETAINED SIZE of Oracle appropriately. When you set the new values, restart Oracle to enable the settings.
- Due to the table scan performed by PFM - RM for Oracle, if you use the alarm table PFM RM Oracle Template Alarms MM.NN# provided by the monitoring template to perform monitoring while only PFM - RM for Oracle is manipulating the database, a Full Table Scans alarm may occur.
- When PFM - RM for Oracle does not connect to the monitoring target Oracle, PFM - RM for Oracle does not detect any alarms except Server Status.

#

MM.NN is version of the data model of the alarm table.

Buffer Cache Usage

Overview

The Buffer Cache Usage alarm monitors the usage ratio of the buffer cache.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	RM Oracle(8.0)
	Alarm message	Buffer cache wait %CVS%
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Selected
	occurrence(s) during	2
	interval(s)	3
Alarm Conditions	**Record**	System Stat Summary Interval (PI)
	Field	Cache Hit %
	Abnormal condition	Cache Hit % < 85
	Warning condition	Cache Hit % < 95
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

Reports/RM Oracle/Troubleshooting/Recent Past/Cache Usage

Buffer Cache Waits

Overview

The Buffer Cache Waits alarm monitors for contention for data in the database and rollback blocks.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	`RM Oracle(8.0)`
	Alarm message	`Dictionary cache miss %CVS%`
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Selected
	occurrence(s) during	`2`
	interval(s)	`3`
Alarm Conditions	**Record**	System Stat Summary Interval (`PI`)
	Field	`Buffer Busy Wait %`
	Abnormal condition	`Buffer Busy Wait % > 5`
	Warning condition	`Buffer Busy Wait % > 3`
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

`Reports/RM Oracle/Troubleshooting/Recent Past/Cache Usage`

Dict. Cache Usage

Overview

The Dict. Cache Usage alarm monitors the shared pool.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	RM Oracle(8.0)
	Alarm message	Dictionary cache miss %CVS%
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Selected
	occurrence(s) during	2
	interval(s)	3
Alarm Conditions	**Record**	System Stat Summary Interval (PI)
	Field	Dict Cache Get Miss %
	Abnormal condition	Dict Cache Get Miss % > 15
	Warning condition	Dict Cache Get Miss % > 10
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

Reports/RM Oracle/Troubleshooting/Recent Past/Cache Usage

Disk Sorts

Overview

The Disk Sorts alarm monitors the percentage of all sort operations executed on disk using memory and disk I/O operations.

This alarm may occur when only PFM - RM for Oracle is manipulating the Oracle Database and no other applications are running. If this is the case, you can suppress this alarm from occurring by increasing the value of `SORT_AREA_SIZE` (or the value of `SORT_AREA_RETAINED_SIZE`, if specified). The guideline for this value is 204,800. After specifying this value, restart the Oracle Database to apply the new setting.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	`RM Oracle(8.0)`
	Alarm message	`%CVS% sorts on disk`
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Not selected
	occurrence(s) during	--
	interval(s)	--
Alarm Conditions	**Record**	System Stat Summary Interval (`PI`)
	Field	`Sort Overflow %`
	Abnormal condition	`Sort Overflow % > 15`
	Warning condition	`Sort Overflow % > 10`
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

`Reports/RM Oracle/Troubleshooting/Real-Time/Disk Sorts - Top 10 Sessions (7.0)`

Free List Waits

Overview

The Free List Waits alarm monitors for contention on free lists.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	`RM Oracle(8.0)`
	Alarm message	`%CVS free list waits`
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Not selected
	occurrence(s) during	--
	interval(s)	--
Alarm Conditions	**Record**	System Stat Summary Interval (`PI`)
	Field	`Free List Wait Events`
	Abnormal condition	`Free List Wait Events > 2`
	Warning condition	`Free List Wait Events > 1`
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

`Reports/RM Oracle/Troubleshooting/Real-Time/Longest Transactions - Top 10 Sessions (7.0)`

Full Table Scans

Overview

The Full Table Scans alarm monitors the percentage of full table scans.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	`RM Oracle(8.0)`
	Alarm message	`Non-index lookups %CVS%`
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Not selected
	occurrence(s) during	--
	interval(s)	--
Alarm Conditions	**Record**	System Stat Summary Interval (`PI`)
	Field	`Non-Index Lookups %`
	Abnormal condition	`Non-Index Lookups % > 10`
	Warning condition	`Non-Index Lookups % > 5`
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

`Reports/RM Oracle/Troubleshooting/Recent Past/Full Table Scans`

Library Cache Usage

Overview

The Library Cache Usage alarm monitors the library cache.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	RM Oracle(8.0)
	Alarm message	Library cache miss %CVS%
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Selected
	occurrence(s) during	2
	interval(s)	3
Alarm Conditions	**Record**	System Stat Summary Interval (PI)
	Field	Lib Cache Miss %
	Abnormal condition	Lib Cache Miss % > 2
	Warning condition	Lib Cache Miss % > 1
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

Reports/RM Oracle/Troubleshooting/Recent Past/Cache Usage

Redo Log Contention

Overview

The Redo Log Contention alarm monitors the occurrence frequency of wait events concerning REDO log.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	`RM Oracle(8.0)`
	Alarm message	`%CVS redo log space requests waited`
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Not selected
	occurrence(s) during	--
	interval(s)	--
Alarm Conditions	**Record**	System Stat Summary Interval (`PI`)
	Field	`Redo Log Space Requests`
	Abnormal condition	`Redo Log Space Requests > 2`
	Warning condition	`Redo Log Space Requests > 1`
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

`Reports/RM Oracle/Troubleshooting/Recent Past/Redo Log Buffer Contention`

Server Status

Overview

The Server Status alarm monitors the availability of Oracle instances (listener and Oracle Database).

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	RM Oracle(8.0)
	Alarm message	Database server availability = %CVS
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Not selected
	occurrence(s) during	--
	interval(s)	--
Alarm Conditions	**Record**	Instance Availability (PD_PDIA)
	Field	Availability
	Abnormal condition	Availability = 0
	Warning condition	Availability = 0
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

Reports/RM Oracle/Status Reporting/Real-Time/System Overview (7.0)

Tablespace Usage

Overview

The Tablespace Usage alarm monitors available tablespace.

Main settings

Alarm properties in PFM - Web Console		Setting
Item	Detailed item	
Main Information	**Product**	`RM Oracle(8.0)`
	Alarm message	`Tablespace %CVS% free`
	Enable alarm	Selected
	Alarm notification	**Notify when the state changed**
	Notification target	**State changes for the alarm**
	Evaluate all data	Not selected
	Monitoring time range	Always
	Report alarm when the following damping condition is reached	Not selected
	occurrence(s) during	--
	interval(s)	--
Alarm Conditions	**Record**	Tablespace (`PD_PDTS`)
	Field	`Free %`
	Abnormal condition	`Free % < 10`
	Warning condition	`Free % < 20`
Actions	**E-mail**	--
	Command	--
	SNMP	**Abnormal**, **Warning**, **Normal**

Legend:

--: The setting is always invalid.

Related reports

`Reports/RM Oracle/Status Reporting/Real-Time/Tablespace Status`

Format of report explanations

This section describes the format used to explain reports. The manual lists the reports in alphabetical order. Each report contains the following parts:

Report name

Indicates the report name for the monitoring template.

- A report whose name contains `(Multi-Agent)` presents information about multiple instances.
- A report whose name does not contain `(Multi-Agent)` presents information about a single instance.
- A report whose name contains `(8.0)` indicates that the data model of the record used for the report is `8.0`.
- A report whose name contains `(7.0)` indicates that the data model of the record used for the report is `7.0`.
- A report whose name contains `(5.0)` indicates that the data model of the record used for the report is 5.0.
- A report whose name does not contain `(8.0)`, `(7.0)`, or `(5.0)` indicates that the data model of the record used for the report is 4.0.

For details about the data models, see *5. Records*.

Overview

Provides an overview of the information that can be displayed in the report.

Storage location

Indicates the storage location of the report.

Record

Indicates the record that contains the performance data used in the report. To display a historical report, you must specify information in advance in order to collect the record indicated in this column. Before displaying a report, display the agent properties in the Agents window of PFM - Web Console, and make sure that `Log` = `Yes` is set for this record. This setting is not needed to display a real-time report.

Fields

Provides a table that describes the fields used in the report.

Drilldown reports (report level)

Provides a table that lists other reports in the monitoring template that are related to this report. To display these drilldown reports, in the PFM - Web Console report window, select the name of a desired drilldown report from the **Drilldown report** drop-down list, and then click **Display Report**. Note that some reports do not have any drilldown reports.

Drilldown reports (field level)

Provides a table that describes reports in the monitoring template that are associated with fields used in this report. To display these drilldown reports, in the PFM - Web Console report window, choose the name of a desired field that is displayed under the graph or at the lower part of the report window. In the case of a historical report, choosing the time displayed in blue displays the report in smaller intervals. Note that some reports do not have any drilldown reports.

Organization of report folders

The following shows the organization of the report folders for PFM - RM for Oracle. Angle brackets enclose folder names:

```
<RM Oracle>
 +-- <Monthly Trend>
 |    +-- Cache Usage Trend(Multi-Agent)
 |    +-- Database Activity Trend(Multi-Agent)
 |    +-- <Advanced>
 |         +-- Database Space Trend(Multi-Agent)(5.0)
 |         +-- Datafile I/O Trend Summary(5.0)
 |         +-- SGA Status Summary(7.0)
 |         +-- <Drilldown Only>
 |              +-- Datafile I/O Trend Detail(Reads)(5.0)
 |              +-- Datafile I/O Trend Detail(Writes)(5.0)
 +-- <Status Reporting>
 |    +-- <Daily Trend>
 |    |    +-- Cache Usage Status(Multi-Agent)
 |    |    +-- Database Activity Status(Multi-Agent)
 |    |    +-- <Advanced>
 |    |         +-- Database Space Summary(Multi-Agent)(5.0)
 |    |         +-- Datafile I/O Status Summary(5.0)
 |    |         +-- <Drilldown Only>
 |    |             +-- Datafile I/O Status Detail(Reads)(5.0)
 |    |             +-- Datafile I/O Status Detail(Writes)(5.0)
 |    +-- <Real-Time>
 |         +-- Database Activity Status(5.0)
 |         +-- Database Space Overview(5.0)
 |         +-- Fast Recovery Area Status(8.0)
 |         +-- Server Configuration Status
 |         +-- SGA Status(7.0)
 |         +-- System Overview(7.0)
 |         +-- Tablespace Status
 |         +-- <Drilldown Only>
 |              +-- Database Activity Status Detail(5.0)
 |              +-- Tablespace Status Detail
 +-- <Troubleshooting>
      +-- <Real-Time>
      |    +-- Blocking Locks(7.0)
      |    +-- Disk Sorts - Top 10 Sessions(7.0)
      |    +-- I/O Activity - Top 10 Datafiles(7.0)
      |    +-- Locked Objects(7.0)
      |    +-- Lock Usage - Top 10 Sessions(7.0)
      |    +-- Longest Transactions - Top 10 Sessions(7.0)
      |    +-- Memory Usage - Top 10 Sessions(7.0)
      |    +-- Physical I/O - Top 10 Sessions(7.0)
      |    +-- System Overview(7.0)
      |    +-- <Drilldown Only>
      |         +-- Datafile I/O Activity Detail(5.0)
      |         +-- Open Cursors
      |         +-- Session Detail(7.0)
      |         +-- Session Statistics Detail
      |         +-- SQL Text
      +-- <Recent Past>
           +-- Cache Usage
```

```
        +-- Full Table Scans
        +-- Redo Log Buffer Contention
```

The following describes each folder:

- `Monthly Trend` folder

  This folder contains reports that display daily information for the past month. Use it to check monthly trends in the system.

- `Status Reporting` folder

  This folder contains reports for displaying daily information. Use this folder to check the overall status of the system. You can display real-time reports as well as historical reports.

  - `Daily Trend` folder

    This folder contains reports for displaying hourly information for the past 24 hours. Use it to check the daily status of the system.

  - `Real-Time` folder

    This folder contains real-time reports for checking the system status.

- `Troubleshooting` folder

  This folder contains reports for displaying information that is useful for resolving problems. In the event of a system problem, use the reports in this folder to check the cause of the problem.

  - `Real-Time` folder

    This folder contains real-time reports for checking the current system status.

  - `Recent Past` folder

    This folder contains historical reports for displaying minute-by-minute information for the past hour.

These folders may also include the following folders. Which folder is included depends on the higher folder. The following describes each folder.

- `Advanced` folder

  This folder contains reports that use a record for which **Log** is set to **No** by default. To display any of these reports, you must use PFM - Web Console to change the record setting so that **Log** is set to **Yes**.

- `Drilldown Only` folder

  This folder contains reports that are displayed as drilldown reports (field level). Use it to display detailed information about fields contained in the parent report.

List of reports

Table 4-2 lists the reports defined in the monitoring template in alphabetical order.

Note that if the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some records or fields collect the following performance data:

- Performance data for the PDBs and root container (CDB$ROOT) that are being monitored
- Performance data for all PDBs and common performance data for database instances

For details, see *5. List of records for PFM - RM for Oracle*.

Table 4–2: List of reports

Report name	Displayed information	Storage location
Blocking Locks (7.0)	Session that includes a lock that places another session in wait status	Reports/RM Oracle/Troubleshooting/Real-Time/
Cache Usage	Buffer cache usage ratio per minute over the past hour	Reports/RM Oracle/Troubleshooting/Recent Past/
Cache Usage Status (Multi-Agent)	Overview of the buffer cache usage ratio per hour over the past 24 hours for multiple agents	Reports/RM Oracle/Status Reporting/Daily Trend/
Cache Usage Trend (Multi-Agent)	Overview of the buffer cache usage ratio per day over the past month for multiple agents	Reports/RM Oracle/Monthly Trend/
Database Activity Status (5.0)	Database activity status	Reports/RM Oracle/Status Reporting/Real-Time/
Database Activity Status Detail (5.0)	Details about database activity status	Reports/RM Oracle/Status Reporting/Real-Time/Drilldown Only/
Database Activity Status (Multi-Agent)	I/O statistical information on database instances per hour over the past 24 hours for multiple agents	Reports/RM Oracle/Status Reporting/Daily Trend/
Database Activity Trend (Multi-Agent)	Overview of I/O processing per day over the past month for multiple agents	Reports/RM Oracle/Monthly Trend/
Database Space Overview (5.0)	Performance data and general database information on tablespaces and data files	Reports/RM Oracle/Status Reporting/Real-Time/
Database Space Summary (Multi-Agent) (5.0)	Overview of free space at the instance level per hour over the past 24 hours for multiple agents	Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/
Database Space Trend (Multi-Agent) (5.0)	Overview of free space for instances per day over the past month for multiple agents	Reports/RM Oracle/Monthly Trend/Advanced/
Datafile I/O Activity Detail (5.0)	Details about disk I/O operations on a data file	Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/
Datafile I/O Status Detail (Reads) (5.0)	Details about the average number of disk read operations on any data file per hour over the past 24 hours	Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/Drilldown Only/

Report name	Displayed information	Storage location
Datafile I/O Status Detail (Writes) (5.0)	Details about the average number of disk write operations on any data file per hour over the past 24 hours	Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/Drilldown Only/
Datafile I/O Status Summary (5.0)	Number of disk I/O operations for each data file per hour over the past 24 hours	Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/
Datafile I/O Trend Detail (Reads) (5.0)	Details about disk read operations on any data file per day for one month	Reports/RM Oracle/Monthly Trend/Advanced/ Drilldown Only/
Datafile I/O Trend Detail (Writes) (5.0)	Details about disk write operations on any data file per day for one month	Reports/RM Oracle/Monthly Trend/Advanced/ Drilldown Only/
Datafile I/O Trend Summary (5.0)	Overview of disk I/O operations on data files per day over the past month	Reports/RM Oracle/Monthly Trend/Advanced/
Disk Sorts - Top 10 Sessions (7.0)	Top 10 sessions in terms of the frequency of disk sort operations	Reports/RM Oracle/Troubleshooting/Real-Time/
Fast Recovery Area Status (8.0)	Status of the fast recovery area	Reports/RM Oracle/Status Reporting/Real-Time/
Full Table Scans	Percentage of table lookups using no index per minute over the past hour	Reports/RM Oracle/Troubleshooting/Recent Past/
I/O Activity - Top 10 Datafiles (7.0)	Top 10 data files in terms of the number of disk I/O operations	Reports/RM Oracle/Troubleshooting/Real-Time/
Lock Usage - Top 10 Sessions (7.0)	Top 10 sessions in terms of the number of locks being held	Reports/RM Oracle/Troubleshooting/Real-Time/
Locked Objects (7.0)	Objects that are locked by transactions	Reports/RM Oracle/Troubleshooting/Real-Time/
Longest Transactions - Top 10 Sessions (7.0)	Top 10 sessions in terms of the length of a transaction that placed another session in wait status	Reports/RM Oracle/Troubleshooting/Real-Time/
Memory Usage - Top 10 Sessions (7.0)	Top 10 sessions in terms of memory usage	Reports/RM Oracle/Troubleshooting/Real-Time/
Open Cursors	Cursor opened by a session	Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/
Physical I/O - Top 10 Sessions (7.0)	Top 10 sessions in terms of concentration of I/O operations	Reports/RM Oracle/Troubleshooting/Real-Time/
Redo Log Buffer Contention	Number of times a process waited for space in the REDO log buffer per minute over the past hour	Reports/RM Oracle/Troubleshooting/Recent Past/
Server Configuration Status	Information on setup parameters	Reports/RM Oracle/Status Reporting/Real-Time/
Session Detail (7.0)	Detailed session information	Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/
Session Statistics Detail	Statistical information about a session	Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/

Report name	Displayed information	Storage location
SGA Status (7.0)	Status of each component in SGA	`Reports/RM Oracle/Status Reporting/Real-Time/`
SGA Status Summary (7.0)	Overview of the status of each component in SGA per day over the past month	`Reports/RM Oracle/Monthly Trend/Advanced/`
SQL Text	Performance data in the `SQL Text` and `Explain Plan` fields	`Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/`
System Overview (7.0) (real-time report on the overall status of instance)	Main performance data indicating the overall status of an instance in real-time	`Reports/RM Oracle/Status Reporting/Real-Time/`
System Overview (7.0) (real-time report on the general status of instance)	Performance data indicating the general status of an instance	`Reports/RM Oracle/Troubleshooting/Real-Time/`
Tablespace Status	Status of all tablespaces in the database	`Reports/RM Oracle/Status Reporting/Real-Time/`
Tablespace Status Detail	Details about a specified tablespace	`Reports/RM Oracle/Status Reporting/Real-Time/Drilldown Only/`

Blocking Locks(7.0)

Overview

The Blocking Locks(7.0) report displays real-time information about a session that includes a lock that places another session in wait status.

If you cannot display this report, create Oracle's static dictionary view DBA_WAITERS. To create the static dictionary view DBA_WAITERS, you must execute the CATBLOCK.SQL script provided by Oracle.

PFM - RM for Oracle does not display this report if the Oracle Database does not have enough performance data to display the report.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

Lock Waiters (PD_PDLW)

Fields

Field name	Description
Holding Session	Session ID that has the lock. To display the Locked Objects(7.0) report, choose this field.
Holding User	Name of the user that has the lock
Mode Held	Lock mode held during data collection
Mode Requested	Lock mode requested during data collection
Waiting Session	Session ID waiting for lock release. To display the Session Detail(7.0) report, choose this field.
Waiting User	Name of the user waiting for the lock to be released

Drilldown reports (report level)

Report name	Description
Longest Transactions - Top 10 Sessions(7.0)	Displays the top 10 transactions in terms of the length of a transaction that places another session in wait status.

Drilldown reports (field level)

Report name	Description
Locked Objects(7.0)	Displays the objects that are locked by the session. To display this report, choose the Holding Session field.
Session Detail(7.0)	Displays detailed information about the session. To display this report, choose the Waiting Session field.

Cache Usage

Overview

The `Cache Usage` report displays the usage ratio of the buffer cache per minute over the past hour.

Storage location

`Reports/RM Oracle/Troubleshooting/Recent Past/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
Cache Hit %	Buffer cache usage
Dict Cache Get Miss %	Percentage of data resulting in cache miss
Lib Cache Miss %	Ratio of the objects loaded to the objects found in the library cache

Cache Usage Status(Multi-Agent)

Overview

The `Cache Usage Status(Multi-Agent)` report displays an overview of the buffer cache usage ratio per hour over the past 24 hours for multiple agents.

Storage location

`Reports/RM Oracle/Status Reporting/Daily Trend/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
Cache Hit %	Buffer cache usage

Cache Usage Trend(Multi-Agent)

Overview

The `Cache Usage Trend(Multi-Agent)` report displays an overview of the buffer cache usage ratio per day over the past month for multiple agents.

Storage location

`Reports/RM Oracle/Monthly Trend/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
Cache Hit %	Buffer cache usage

Database Activity Status(5.0)

Overview

The Database Activity Status(5.0) report displays in real-time the database activity.

Storage location

Reports/RM Oracle/Status Reporting/Real-Time/

Record

Activity Summary (PD_PDAS)

Fields

Field name	Description
DML Locks %	Percentage of DML locks to the DML_LOCKS parameter in the init.ora initialization parameter file
Open Cursors %	Percentage of open cursors to the OPEN_CURSORS parameter in the init.ora initialization parameter file
Processes %	Percentage of processes to the PROCESSES parameter in the init.ora initialization parameter file
Sessions %	Percentage of sessions to the SESSIONS parameter in the init.ora initialization parameter file
Transactions %	Percentage of transactions to the TRANSACTIONS parameter in the init.ora initialization parameter file

Drilldown reports (report level)

Report name	Description
Database Activity Status Detail(5.0)	Displays details about the database activity status.

Database Activity Status Detail(5.0)

Overview

The Database Activity Status Detail(5.0) report displays in real-time details about the database activity status. This is a drilldown report.

Storage location

Reports/RM Oracle/Status Reporting/Real-Time/Drilldown Only/

Record

Activity Summary (PD_PDAS)

Fields

Field name	Description
Active Transactions	Number of active transactions in active sessions
DML Locks %	Percentage of DML locks to the DML_LOCKS parameter in the init.ora initialization parameter file
DML Locks Held	Number of current DML locks
Open Cursors	Number of current open cursors
Open Cursors %	Percentage of open cursors to the OPEN_CURSORS parameter in the init.ora initialization parameter file
Processes	Number of current Oracle processes
Processes %	Percentage of processes to the PROCESSES parameter in the init.ora initialization parameter file
Sessions	Number of current sessions
Sessions %	Percentage of sessions to the SESSIONS parameter in the init.ora initialization parameter file
Transactions %	Percentage of transactions to the TRANSACTIONS parameter in the init.ora initialization parameter file

Database Activity Status(Multi-Agent)

Overview

The `Database Activity Status(Multi-Agent)` report displays I/O statistical information on database instances per hour over the past 24 hours for multiple agents.

Storage location

`Reports/RM Oracle/Status Reporting/Daily Trend/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
I/O Ops/sec	Number of I/O operations per second

Database Activity Trend(Multi-Agent)

Overview

The `Database Activity Trend(Multi-Agent)` report displays an overview of I/O processing per day over the past month for multiple agents.

Storage location

`Reports/RM Oracle/Monthly Trend/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
I/O Ops/sec	Number of I/O operations per second

Database Space Overview(5.0)

Overview

The `Database Space Overview(5.0)` report displays in real-time performance data and general database information on tablespaces and data files.

Storage location

`Reports/RM Oracle/Status Reporting/Real-Time/`

Record

Database (`PD_PDDB`)

Fields

Field name	Description
Datafiles	Number of data files used by tablespaces
DB Name	Database name
Extents	Number of extents
Free %	Percentage of free space
Free Extents	Number of available extents
Free Mbytes	Free space in megabytes
Rollback Segments	Number of rollback segments
Segments	Number of segments
Tablespaces	Number of tablespaces
Used Mbytes	Used space in megabytes

Drilldown reports (report level)

Report name	Description
`Tablespace Status`	Displays usage information on all tablespaces in the instance.

Database Space Summary(Multi-Agent)(5.0)

Overview

The `Database Space Summary(Multi-Agent)(5.0)` report displays an overview of free space at the instance level per hour over the past 24 hours for multiple agents.

Storage location

`Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/`

Record

Database Interval (`PI_PIDB`)

Fields

Field name	Description
Datafiles	Number of data files used by the tablespace
Free %	Percentage of free space
Free Extents	Number of available extents
Mbytes	Size of the tablespace in megabytes
Tablespaces	Number of tablespaces

Database Space Trend(Multi-Agent)(5.0)

Overview

The `Database Space Trend(Multi-Agent)(5.0)` report displays an overview of free space for instances per day over the past month for multiple agents.

Storage location

`Reports/RM Oracle/Monthly Trend/Advanced/`

Record

Database Interval (`PI_PIDB`)

Fields

Field name	Description
Datafiles	Number of data files used by the tablespace
Free %	Percentage of free space
Free Extents	Number of available extents
Mbytes	Size of the tablespace in megabytes
Tablespaces	Number of tablespaces

Datafile I/O Activity Detail(5.0)

Overview

The `Datafile I/O Activity Detail(5.0)` report displays in real-time the details about disk I/O operations on a data file. This is a drilldown report.

Storage location

`Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/`

Record

Data File (`PD_PDDF`)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Blocks Read	Number of physical block read operations
Physical Blocks Written	Number of physical block write operations
Physical Reads	Number of physical read operations
Physical Writes	Number of physical write operations
Tablespace Name	Tablespace name

Datafile I/O Status Detail(Reads)(5.0)

Overview

The `Datafile I/O Status Detail(Reads)(5.0)` report displays details about average disk read operations on any data file per hour over the past 24 hours. This is a drilldown report.

Storage location

`Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/Drilldown Only/`

Record

Data File Interval (`PI_PIDF`)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Blocks Read	Number of physical block read operations
Physical Blocks Written	Number of physical block write operations
Physical Reads	Number of completed physical read operations
Physical Writes	Number of completed physical write operations
Tablespace Name	Tablespace name

Datafile I/O Status Detail(Writes)(5.0)

Overview

The `Datafile I/O Status Detail(Writes)(5.0)` report displays details about average disk write operations on any data file per hour over the past 24 hours. This is a drilldown report.

Storage location

`Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/Drilldown Only/`

Record

Data File Interval (`PI_PIDF`)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Blocks Read	Number of physical block read operations
Physical Blocks Written	Number of physical block write operations
Physical Reads	Number of completed physical read operations
Physical Writes	Number of completed physical write operations
Tablespace Name	Tablespace name

Datafile I/O Status Summary(5.0)

Overview

The Datafile I/O Status Summary(5.0) report displays an overview of disk I/O operations for each data file per hour over the past 24 hours.

Storage location

Reports/RM Oracle/Status Reporting/Daily Trend/Advanced/

Record

Data File Interval (PI_PIDF)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Reads(Total)	Total number of physical read operations. Choose this field to display the Datafile I/O Status Detail(Reads)(5.0) report.
Physical Writes(Total)	Total number of physical write operations. Choose this field to display the Datafile I/O Status Detail(Writes)(5.0) report.

Drilldown reports (field level)

Report name	Description
Datafile I/O Status Detail(Reads)(5.0)	Displays details about average disk read operations on any data file per hour over the past 24 hours. To display this report, click the Physical Reads(Total) field.
Datafile I/O Status Detail(Writes)(5.0)	Displays details about average disk write operations on any data file per hour over the past 24 hours. To display this report, click the Physical Writes(Total) field.

Datafile I/O Trend Detail(Reads)(5.0)

Overview

The `Datafile I/O Trend Detail(Reads)(5.0)` report displays details about disk read operations on any data file per day for one month. This is a drilldown report.

Storage location

`Reports/RM Oracle/Monthly Trend/Advanced/Drilldown Only/`

Record

Data File Interval (`PI_PIDF`)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Blocks Read	Number of physical block read operations
Physical Blocks Written	Number of physical block write operations
Physical Reads	Number of completed physical read operations
Physical Writes	Number of completed physical write operations
Tablespace Name	Tablespace name

Datafile I/O Trend Detail(Writes)(5.0)

Overview

The `Datafile I/O Trend Detail(Writes)(5.0)` report displays details about disk write operations on any data file per day for one month. This is a drilldown report.

Storage location

`Reports/RM Oracle/Monthly Trend/Advanced/Drilldown Only/`

Record

Data File Interval (`PI_PIDF`)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Blocks Read	Number of physical block read operations
Physical Blocks Written	Number of physical block write operations
Physical Reads	Number of completed physical read operations
Physical Writes	Number of completed physical write operations
Tablespace Name	Tablespace name

Datafile I/O Trend Summary(5.0)

Overview

The Datafile I/O Trend Summary(5.0) report displays an overview of disk I/O operations on data files per day over the past month.

Storage location

Reports/RM Oracle/Monthly Trend/Advanced/

Record

Data File Interval (PI_PIDF)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Reads	Number of physical read operations that were completed during an interval. Choose this field to display the Datafile I/O Status Detail(Reads)(5.0) report.
Physical Writes	Number of physical write operations that were completed during an interval. Choose this field to display the Datafile I/O Status Detail(Writes)(5.0) report.

Drilldown reports (field level)

Report name	Description
Datafile I/O Trend Detail(Reads)(5.0)	Displays details about disk read operations on any data per day over the past one month. To display this report, choose the Physical Reads field.
Datafile I/O Trend Detail(Writes)(5.0)	Displays details about disk write operations on any data per day over the past one month. To display this report, choose the Physical Writes field.

Disk Sorts - Top 10 Sessions(7.0)

Overview

The `Disk Sorts - Top 10 Sessions(7.0)` report displays in real-time the top 10 sessions that frequently perform disk sort operations.

Storage location

`Reports/RM Oracle/Troubleshooting/Real-Time/`

Record

Session Statistics Summary (`PD_PDS2`)

Fields

Field name	Description
SID	Session ID
Sort Overflow %	Percentage of sort operations using temporary segments. To display the `Session Detail(7.0)` report, choose this field.
User	Oracle user name

Drilldown reports (field level)

Report name	Description
`Session Detail(7.0)`	Displays detailed information about a session. To display this report, choose the Sort Overflow % field.

Fast Recovery Area Status(8.0)

Overview

The `Fast Recovery Area Status(8.0)` report displays in real-time the status of a fast recovery area.

Storage location

`Reports/RM Oracle/Status Reporting/Real-Time/`

Record

Collection Instance 2 (`PD_PCI`)

Fields

Field name	Description
Recovery File Dest	Location of the fast recovery area
Recovery Space Limit	Maximum size of the fast recovery area in megabytes
Recovery Space Used	Amount of space used in the fast recovery area in megabytes
Recovery Space Reclaimable	Size of obsolete, redundant, and other low priority files from the fast recovery area in megabytes
Recovery File Nums	Number of files in the fast recovery area
Recovery Space Free Mbytes	Amount of free space in the fast recovery area in megabytes
Recovery Space Free %	Percentage of free space in the fast recovery area

Full Table Scans

Overview

The `Full Table Scans` report displays the percentage of table lookups using no index per minute over the past hour.

Storage location

`Reports/RM Oracle/Troubleshooting/Recent Past/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
Non-Index Lookups %	Percentage ratio of full table scans that do not involve caching

Drilldown reports (field level)

Report name	Description
`Cache Usage`	Displays the buffer cache usage ratio. To display this report, choose the Non Index Lookups % field.

I/O Activity - Top 10 Datafiles(7.0)

Overview

The I/O Activity - Top 10 Datafiles(7.0) report displays in real-time the top 10 data files in terms of the number of disk I/O operations.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

Data File (PD_PDDF)

Fields

Field name	Description
File #	File number
File Name	File name
Physical Reads	Number of physical read operations. To display the Datafile I/O Activity Detail(5.0) report, choose this field.
Physical Writes	Number of physical write operations. To display the Datafile I/O Activity Detail(5.0) report, choose this field.

Drilldown reports (report level)

Report name	Description
Datafile I/O Activity Detail(5.0)	Displays the details about I/O operations for all data files. To display this report, choose the Physical Read or Physical Writes field.
Physical I/O - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of the number of I/O operations.

Drilldown reports (field level)

Report name	Description
Datafile I/O Activity Detail(5.0)	Displays details about disk I/O operations for a specified data file. To display this report, choose the Physical Reads or Physical Writes field.

Lock Usage - Top 10 Sessions(7.0)

Overview

The Lock Usage - Top 10 Sessions(7.0) report displays in real-time the top 10 sessions in terms of the number of locks being held.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

Session Detail (PD_PDS)

Fields

Field name	Description
Locks Held	Number of locks held during data collection. To display the Session Detail(7.0) report, choose this field.
SID	Session ID
User	Oracle user name

Drilldown reports (field level)

Report name	Description
Session Detail(7.0)	Display detailed information about a session. To display this report, choose the Locks Held field.

Locked Objects(7.0)

Overview

The Locked Objects(7.0) report displays real-time information about the objects that are locked by transactions.

PFM - RM for Oracle does not display this report if the Oracle Database does not have enough performance data to display the report.

Note:

The drilldown report of the locked objects that are not performed transactions cannot be displayed correctly.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

Transaction Lock (PD_PDTL)

Fields

Field name	Description
Locked Mode	Lock mode held. The valid values are as follows: • 1 (null) • 2 (row share) • 3 (row exclusive) • 4 (share) • 5 (share row exclusive) • 6 (exclusive)
Object Name	Object name
Object Type	Object type
Owner	Object owner
SID	Session ID. To display the Session Detail(7.0) report, choose this field.
User	Oracle user name

Drilldown reports (field level)

Report name	Description
Session Detail(7.0)	Displays detailed information about a session. To display this report, choose the SID field.

Longest Transactions - Top 10 Sessions(7.0)

Overview

The Longest Transactions - Top 10 Sessions(7.0) report displays in real-time the top 10 transactions in terms of the length of a transaction that placed another session in wait status.

PFM - RM for Oracle does not display this report if the Oracle Database does not have enough performance data to display the report.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

Transaction (PD_PDTR)

Fields

Field name	Description
Cache Hit %	Percentage of logical I/O operations to physical I/O operations.
Locks	Number of locks being held by the transaction. To display the Blocking Locks(7.0) report, choose this field.
Logical I/O	Logical I/O operations
Physical I/O	Physical I/O operations
SID	Session ID. To display the Open Cursors report, choose this field.
Tran Secs	Number of seconds since the transaction started
User	Oracle user name

Drilldown reports (field level)

Report name	Description
Blocking Locks(7.0)	Displays a session that includes a lock that places another session in wait status. To display this report, choose the Locks field.
Open Cursors	Displays the cursors that are opened by a session. To display this report, choose the SID field.

Memory Usage - Top 10 Sessions(7.0)

Overview

The Memory Usage - Top 10 Sessions(7.0) report displays in real-time the top 10 sessions in terms of memory usage.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

Session Statistics Summary (PD_PDS2)

Fields

Field name	Description
PGA Memory	Displays the PGA size for the sessions. To display a Session Detail(7.0) report, choose this field.
SID	Session ID
UGA Memory	Displays the UGA size for the sessions. To display a Session Detail(7.0) report, choose this field.
User	Oracle user name

Drilldown reports (field level)

Report name	Description
Session Detail(7.0)	Displays detailed information about a session. To display this report, choose the PGA Memory or UGA Memory field.

Open Cursors

Overview

The Open Cursors report displays in real-time a cursor opened by a session. This is a drilldown report.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/

Record

Open Cursor (PD_PDOC)

Fields

Field name	Description
Addrhash	Character string that identifies the SQL statement being executed
Program	Name of the program being executed
SID	Session ID
SQL Text	First 60 characters of the SQL statement that was analyzed by the open cursor. To display the SQL Text report, choose this field.
User	Oracle user name

Drilldown reports (report level)

Report name	Description
SQL Text	Displays the performance data in the SQL Text and Explain Plan fields. To display this field, choose the SQL Text field.

Physical I/O - Top 10 Sessions(7.0)

Overview

The `Physical I/O - Top 10 Sessions(7.0)` report displays in real-time the top 10 sessions in terms of concentration of I/O operations.

Storage location

`Reports/RM Oracle/Troubleshooting/Real-Time/`

Record

Session I/O Interval (`PI_PIIO`)

Fields

Field name	Description
Physical Reads	Number of physical read operations. To display the `Session Detail(7.0)` report, choose this field.
SID	Session ID
User	Oracle user name

Drilldown reports (report level)

Report name	Description
`I/O Activity - Top 10 Datafiles(7.0)`	Displays the top 10 data files in terms of the number of disk I/O operations.

Drilldown reports (field level)

Report name	Description
`Session Detail(7.0)`	Displays detailed information about a session. To display this report, choose the Physical Reads field.

Redo Log Buffer Contention

Overview

The `Redo Log Buffer Contention` report displays the number of times a process waited for space to be allocated in the REDO log entry per minute over the past hour.

Storage location

`Reports/RM Oracle/Troubleshooting/Recent Past/`

Record

System Stat Summary Interval (`PI`)

Fields

Field name	Description
Redo Log Space Requests	Number of times Oracle must wait for disk spaces to be allocated to REDO log entry because the active log file is full.

Server Configuration Status

Overview

The `Server Configuration Status` report displays real-time information on setup parameters.

Storage location

`Reports/RM Oracle/Status Reporting/Real-Time/`

Record

Parameter Values (`PD_PDP`)

Fields

Field name	Description
Is Default	Default value. The valid values are `TRUE` and `FALSE`.
Parameter Name	Parameter name. There are two parameters: • Parameter with size restriction that has no effect on performance • Parameter with no size restriction that has an effect on performance
Value	Parameter value

Session Detail(7.0)

Overview

The Session Detail(7.0) report displays in real-time detailed information about a session. This is a drilldown report.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/

Record

Session Detail (PD_PDS)

Fields

Field name	Description
Addrhash	Character string that identifies the SQL statement being executed
Blocking Locks	Number of locks that are blocking other locks
Command	Command being executed. To display the SQL Text report, choose this field.
Container ID	The ID of the container to which this session belongs. This field is valid if the monitoring target is Oracle Database 12c R2 or later in a CDB configuration. Otherwise, the value is 0.
Locks Held	Number of locks held during data collection
Open Cursors	Number of open cursors. To display the Open Cursors report, choose this field.
Program	Name of the program being executed
Session Events	Number of events the session is waiting for
Session Waits	Number of resources and events the session is waiting for
Sessions Blocked	Number of sessions that have been placed in wait status by this session
SID	Session ID. To display the Session Statistics Detail report, choose this field.
Table Accesses	Number of table accesses
Transactions	Number of active transactions
User	Oracle user name

Drilldown reports (field level)

Report name	Description
Open Cursors	Displays detailed information about the open cursors in the session. To display this report, choose the Open Cursors field.
Session Statistics Detail	Displays detailed statistical information about a session. To display this report, choose the SID field.
SQL Text	Displays the performance data in the SQL Text and Explain Plan fields. To display this report, choose the Command field.

Session Statistics Detail

Overview

The `Session Statistics Detail` report displays in real-time statistical information about a session. This is a drilldown report.

Storage location

`Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/`

Record

Session Statistics Summary (`PD_PDS2`)

Fields

Field name	Description
Blocking Locks	Number of locks in a session that are blocking other locks
Cache Hit %	Buffer cache usage
Disk Sorts	Number of disk sort operations
Lock Requests	Number of lock requests
Lock Waits	Number of times lock request was placed in wait status
Memory Sorts	Number of sort operations in memory
PGA Memory	Session's PGA size
Physical Reads	Number of real read operations on a database block from disk
Program	Program name
SID	Session ID
Sort Overflow %	Percentage of sort operations using temporary segments
UGA Memory	Session's UGA size
User	Oracle user name

SGA Status(7.0)

Overview

The SGA Status(7.0) report displays in real-time the status of a component in SGA.

Storage location

Reports/RM Oracle/Status Reporting/Real-Time/

Record

SGA Components (PD_PDSG)

Fields

Field name	Description
Bytes	Memory size (unit: bytes)
Component Name	SGA component name
Container ID	The ID of the container to which SGA component belongs. This field is valid if the monitoring target is Oracle Database 12c R2 or later in a CDB configuration. Otherwise, the value is 0.

SGA Status Summary(7.0)

Overview

The SGA Status Summary(7.0) report displays an overview of components in SGA per day over the past month.

Storage location

Reports/RM Oracle/Monthly Trend/Advanced/

Record

SGA Components (PD_PDSG)

Fields

Field name	Description
Bytes	Memory size (unit: bytes)
Component Name	SGA component name
Container ID	The ID of the container to which SGA component belongs. This field is valid if the monitoring target is Oracle Database 12c R2 or later in a CDB configuration. Otherwise, the value is 0.
PDB Bytes	Retrieves total size of memory for each Container ID field. The value can be either of the following: • If the Container ID is not 0, total size of memory of all SGA components that are allocated to PDBs or the root container (CDB$ROOT) • If the Container ID is 0, total size of memory of common SGA components of database instances This field is valid if the monitoring target is Oracle Database 12c R2 or later in a CDB configuration. Otherwise, the value is 0.
Total Bytes	Total size of memory used by each SGA component (unit: bytes)

SQL Text

Overview

The SQL Text report displays in real-time the performance data in the SQL Text and Explain Plan fields. This is a drilldown report.

Note:

Do not use this report alone. This report is displayed in a drilldown from the Open Cursors report or Session Detail(5.0) report.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/Drilldown Only/

Record

SQL Text (PD_PDSQ)

Fields

Field name	Description
Explain Plan	Execution plan on the SELECT, UPDATE, INSERT, and DELETE statements selected by the Oracle optimizer.
SQL Text	Part of the SQL text

System Overview(7.0)(real-time report on the overall status of instance)

Overview

The `System Overview(7.0)` report displays in real-time the main performance data indicating the overall status of an instance.

Storage location

`Reports/RM Oracle/Status Reporting/Real-Time/`

Record

System Stat Summary (`PD`)

Fields

Field name	Description
Cache Hit %	Buffer cache usage. To display the `Physical I/O - Top 10 Sessions(7.0)` report, choose this field.
Continued Row %	Percentage of the rows that are longer than one block or moved (continued rows or moved rows)
Current Logons	Number of logons to the Oracle Database during data collection
Deadlocks	Number of process deadlocks caused by enqueuing resulting from manipulation of DML
Disk Sorts	Number of disk sort operations. To display the `Disk Sorts - Top 10 Sessions(7.0)` report, choose this field.
Lock Requests	Number of lock requests. To display the `Lock Usage - Top 10 Sessions(7.0)` report, choose this field.
Memory Sorts	Number of memory sort operations. To display the `Disk Sorts - Top 10 Sessions(7.0)` report, choose this field.
Session CPU Usage	CPU time used in 1/100 seconds
Session PGA Memory	PGA size used by active sessions during data collection. To display the `Memory Usage - Top 10 Sessions(7.0)` report, choose this field.
Session UGA Memory	UGA size used by active sessions. To display the `Memory Usage - Top 10 Sessions(7.0)` report, choose this field.
Sort Overflow %	Percentage of sort operations using temporary segments. To display the `Disk Sorts - Top 10 Sessions(7.0)` report, choose this field.
Total SQL Executions	Number of SQL statement executions
User Calls	Number of requests from application to database that have been processed
User Commits	Number of transactions. To display the `Longest Transactions - Top 10 Sessions(7.0)` report, choose this field.
User Rollbacks	Number of rollbacks

Drilldown reports (report level)

Report name	Description
`Database Activity Status(5.0)`	Displays instance activity status.

Report name	Description
Database Space Overview(5.0)	Displays usage information about tablespaces and data files for the instance.
Error Log	Displays the error messages that have been issued since the agent started.
Server Configuration Status	Displays all setup parameter information for the server.
Tablespace Status	Displays all tablespace information.

Drilldown reports (field level)

Report name	Description
Disk Sorts - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of the frequency of disk sort operations. To display this report, choose the following fields: • Disk Sorts • Memory Sorts • Sort Overflow %
Lock Usage - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of the number of locks held. To display this report, choose the Lock Requests field.
Longest Transactions - Top 10 Sessions(7.0)	Displays the top 10 transactions in terms of the length of a transaction that placed another session in wait status. To display this report, choose the User Commits field.
Memory Usage - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of memory usage. To display this report, choose the Session PGA Memory or Session UGA Memory field.
Physical I/O - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of concentration of I/O operations. To display this report, choose the Cache Hit % field.

System Overview(7.0) (real-time report on the general status of instance)

Overview

The System Overview(7.0) report displays in real-time the main performance data indicating the general status of an instance.

Storage location

Reports/RM Oracle/Troubleshooting/Real-Time/

Record

System Stat Summary (PD)

Fields

Field name	Description
Cache Hit %	Buffer cache usage. To display the Physical I/O - Top 10 Sessions(7.0) report, choose this field.
Continued Row %	Percentage of the rows that are longer than one block or moved (continued rows or moved rows)
Current Logons	Number of logons to the Oracle Database during data collection
Deadlocks	Number of process deadlocks caused by enqueuing resulting from manipulation of DML
Disk Sorts	Number of disk sort operations. To display the Disk Sorts - Top 10 Sessions(7.0) report, choose this field.
Lock Requests	Number of lock requests. To display the Lock Usage - Top 10 Sessions(7.0) report, choose this field.
Memory Sorts	Number of memory sort operations. To display the Disk Sorts - Top 10 Sessions(7.0) report, choose this field.
Session CPU Usage	CPU time used in 1/100 seconds
Session PGA Memory	PGA size used by active sessions during data collection. To display the Memory Usage - Top 10 Sessions(7.0) report, choose this field.
Session UGA Memory	UGA size used by active sessions. To display the Memory Usage - Top 10 Sessions(7.0) report, choose this field.
Sort Overflow %	Percentage of sort operations using temporary segments. To display the Disk Sorts - Top 10 Sessions(7.0) report, choose this field.
Total SQL Executions	Total number of SQL statement executions
User Calls	Number of requests from application to database that have been processed
User Commits	Number of transactions. To display the Longest Transactions - Top 10 Sessions(7.0) report, choose this field.
User Rollbacks	Number of rollbacks

Drilldown reports (report level)

Report name	Description
Database Activity Status(5.0)	Displays the instance activity status.

Report name	Description
Database Space Overview(5.0)	Displays usage information about tablespaces and data files for the instance.
Error Log	Displays the error messages that have been issued since the agent started.
Server Configuration Status	Displays all setup parameter information for the server.
Tablespace Status	Displays all tablespace information.

Drilldown reports (field level)

Report name	Description
Disk Sorts - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of the frequency of disk sort operations. To display this report, choose the following fields: • Disk Sorts • Memory Sorts • Sort Overflow %
Lock Usage - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of the number of locks held. To display this report, choose the Lock Requests field.
Longest Transaction - Top 10 Sessions(7.0)	Displays the top 10 transactions in terms of the length of a transaction that placed another session in wait status. To display this report, choose the User Commits field.
Memory Usage - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of memory usage. To display this report, choose the Session PGA Memory or Session UGA Memory field.
Physical I/O - Top 10 Sessions(7.0)	Displays the top 10 sessions in terms of concentration of I/O operations. To display this report, choose the Cache Hit % field.

Tablespace Status

Overview

The Tablespace Status report displays in real-time the status of all tablespaces in the database.

Storage location

`Reports/RM Oracle/Status Reporting/Real-Time/`

Record

Tablespace (`PD_PDTS`)

Fields

Field name	Description
Free %	Percentage of free space
Free Mbytes	Free space in megabytes. To display the `Tablespace Status Detail` report, choose this field.
Tablespace Name	Name of tablespace associated with the instance
Used Mbytes	Used space in megabytes. To display the `Tablespace Status Detail` report, choose this field.

Drilldown reports (field level)

Report name	Description
`Tablespace Status Detail`	Displays detailed information about a specified tablespace. To display this report, choose the Free Mbytes or Used Mbytes field.

Tablespace Status Detail

Overview

The `Tablespace Status Detail` report displays in real-time details about a specified tablespace. This is a drilldown report.

Storage location

`Reports/RM Oracle/Status Reporting/Real-Time/Drilldown Only/`

Record

Tablespace (`PD_PDTS`)

Fields

Field name	Description
Data Files	Number of data files used by the tablespace
Extents	Number of extents
Free %	Percentage of free space
Free Extents	Number of available extents
Free Mbytes	Free space in megabytes
Mbytes	Size of the tablespace in megabytes
Segments	Number of segments
Tablespace Name	Tablespace name

5 Records

This chapter describes the records for PFM - RM for Oracle. For details about collecting performance data for each type of record, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide* or the chapter on management of operation monitoring data in the *JP1/Performance Management User's Guide*.

Data model

Each PFM - RM records and fields are referred to collectively as a *data model*. There is a specific version number for each PFM - RM and its data model.

For details about data model versions of PFM - RM for Oracle, see *J. Version Compatibility*.

To check the data model version of each PFM - RM for Oracle, use the Agents window in PFM - Web Console to display the agent properties.

For details about data models, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.

Format of record explanations

This chapter describes the records for PFM - RM for Oracle in alphabetical order. The explanation of each record consists of the following subsections:

Function

Provides an overview of the performance data that is stored in the record and includes important information that should be noted.

Default and changeable values

Consists of a table of the default values for the performance data under the collection conditions that are defined for the record, and indicates whether or not the values can be changed by the user. The table below lists and describes the items that appear in the Default and changeable values subsections. For details about each item in the table, see the chapter on management of operation monitoring data in the *JP1/Performance Management User's Guide*.

Table 5–1: Default and changeable value

Item	Default value	Changeable
Collection Interval	Performance data collection interval (in seconds)	Y: Changeable N: Not changeable
Collection Offset#1	Offset value for starting performance data collection (in seconds). For details about offset values, see the chapter on management of operation monitoring data in the *JP1/Performance Management User's Guide*. For collection start time for the performance data, see the chapter on the Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.	
Log#2	Whether or not collected performance data is stored in the Store database: `Yes`: Store (however, if `Collection Interval=0` is set, collected performance data is not stored). `No`: Do not store.	
LOGIF	Conditions for storing collected performance data in the Store database	
Over 10 Sec Collection Time#3,#4	Whether the collection of records might require 10 seconds or more. `Yes`: Might require 10 seconds or more. `No`: Does not require 10 seconds.	

#1

The range of values is from 0 to 32,767 (inclusive) seconds (within the value range specified for Collection Interval). This is used to distribute the collection processing workload because data collection is concentrated when multiple data items are collected. The data collection time that is recorded is the same as for the Collection Interval regardless of the value of Collection Offset.

If you change the value of Collection Offset, you should take into account the collection processing workload.

#2

The default values for each record are for remote agents. In PFM - RM for Oracle, the default values for group agents are "No".

#3

This property is displayed if the collection of historical data is prioritized over the display processing of real-time reports. For details, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

#4

The value of this item is an approximation at best. Depending on the environment being monitored, the configuration, the load status, and even the collection of records whose value is `No` might require 10 seconds or more. In such cases, real-time reports might not be displayed.

In addition, depending on the collection interval and offset settings, real-time reports might not be displayed if the collection of historical data takes place successively for multiple records, even when the collection time for each record is short. In this case, check and, if necessary, revise the collection interval, or consider using historical reports.

ODBC key fields

These fields display the primary keys that are necessary to use the data retrieved from records stored in the Store database on either PFM - Manager or PFM - Base. Some ODBC key fields are common to all records, and some are specific to each record. This section presents the ODBC key fields that are specific to each record. Only the multi-instance records have specific ODBC key fields.

For details about the ODBC key fields common to all records, see *List of ODBC key fields* in this chapter.

Lifetime

Indicates the period during which consistency is guaranteed for the performance data that is collected in the record. For details about lifetimes, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.

Record size

Indicates the amount of performance data that can be collected and stored in each record at one time.

Fields

Provides a table that describes the fields of each record. The table contains the following items:

- PFM - View name (PFM - Manager name)
  - PFM - View name

    Indicates the field name that is displayed with PFM - Web Console (PFM - View name).
  - PFM - Manager name

    Field name (PFM - Manager name) to be specified in SQL statements when SQL statements are used from PFM - Manager to access the field data stored in the Store database.

    You specify the record ID at the beginning of an SQL statement. For example, to specify the Disk Sorts (`SORTS_DISK`) field of the System Stat Summary (`PD`) record, specify `PD_SORTS_DISK`.
- Description

  Explanation of the performance data that is stored in the field.

  Notes #1 and #2 in the table indicate the following:

  #1:

  A value in this field is the latest monitored value that the monitoring target returns at the time of data collection.

  #2:

  When this field is displayed in the historical report, the PFM - View name (Total) field is added.

  For each field, the following methods of calculating performance data are available:
  - Calculations (such as averages or percentages) based on data collected in the current and previous intervals.

- Calculations based on data collected in the current interval only. This data includes the values accumulated internally by the OS (the data marked as #1 in the table).
- Calculations based on data in other fields (See Data source in the table of each record's fields.)

Unless otherwise noted, the value in each field is an unprocessed value that was collected at a specified data collection interval.

The following types of values are displayed in a historical report when records of the PI record type are summarized and displayed while the report interval setting is not "minute":

- The average value for the summarized interval
- The last collected value
- The sum total of values
- The minimum value
- The maximum value

Unless otherwise noted, the value in each field displays the average for the summarized interval.

- Summary

  The summarization method (Summary rules) used by Remote Monitor Store when summarizing data. For details, see *Summary rules* in this chapter.

- Format

  Data type of the field value, such as `double`. For details about the data types, see *List of data types* in this chapter.

- Delta

  In contrast to the data collected as the cumulative value, the so-called *delta* is the data that indicates the changed amount. For details about delta, see *Field values* in this chapter.

- Supported version

  Indicates the Oracle version that can use the field.

  If a version number is shown, the field is supported by that version and all subsequent versions. *All* means that all Oracle versions support the field. *Not supported* means that the field is not supported by Oracle.

- Data source

  Method used to obtain the field value or the source of the data. For details about field values, see *Field values* in this chapter.

List of ODBC key fields

Some ODBC key fields are common to all records, and some are specific to each record. This section presents the ODBC key fields common to all records. The ODBC key fields are necessary to use the data retrieved from records stored in the Store database on PFM - Manager.

The table below lists the ODBC key fields common to all records. For details about the ODBC key fields specific to each record, see the details of each record.

Table 5–2: List of ODBC key fields common to all records

ODBC key field	ODBC format	Data	Description
*record-ID*_DATE	SQL_INTEGER	Internal	Key in the record that indicates the record creation date
*record-ID*_DATETIME	SQL_INTEGER	Internal	Combination of the *record-ID*_DATE and *record-ID*_TIME fields
*record-ID*_DEVICEID	SQL_VARCHAR	Internal	*instance-name*[*host-name*]
*record-ID*_DRAWER_TYPE	SQL_VARCHAR	Internal	Type. Valid values are as follows: m: Minute H: Hour D: Day W: Week M: Month Y: Year
*record-ID*_PROD_INST	SQL_VARCHAR	Internal	Instance name of PFM - RM for Oracle
*record-ID*_PRODID	SQL_VARCHAR	Internal	Product ID of PFM - RM for Oracle
*record-ID*_RECORD_TYPE	SQL_VARCHAR	Internal	Identifier indicating the record type (4 bytes)
*record-ID*_TIME	SQL_INTEGER	Internal	Record creation time (Greenwich mean time (GMT))

Summary rules

For records of the PI record type, two types of data are stored in the Store database: The data collected at the interval set in Collection Interval, and the data summarized for a specific period of time (minute, hour, day, week, month, or year) according to a predefined rule. The type of summarization is defined for each field. This definition is called a *summarization rule*.

Depending on the summarization rule, intermediate data in the summarization period must be retained. In this case, a field for holding the intermediate data is added to a record in the Store database. This field is called an *added field*.

Part of an added field is displayed as a record field in PFM - Web Console. The added fields displayed on PFM - Web Console can be used as the fields to be displayed in a historical report.

The fields referred to in the record descriptions in this chapter are known as *record-specific fields* to distinguish them from additional fields generated when data is summarized.

Additional fields have the following field names:

- Additional field contained in the Store database
  PFM - Manager name of the record-specific field, plus a suffix
- Additional field displayed in PFM - Web Console
  PFM - View name of the record-specific field, plus a suffix

The following table shows the suffix added to the PFM - Manager name, the suffix added to the corresponding PFM - View name, and the data stored in that field.

Table 5–3: List of suffixes in additional field names

Suffix added to the PFM - Manager name	Suffix added to the PFM - View name	Field data
_TOTAL	(Total)	Sum of the field values in all records in the summary period
_COUNT	--	Number of records collected in the summary period
_HI	(Max)	Highest field value in the records in the summary period
_LO	(Min)	Lowest field value in the records in the summary period

Legend:
--: No additional field.

The table below lists the summary rules.

Table 5–4: List of summary rules

Summary rule name	Summary rules
COPY	Stores the actual field value of the most recent record in the summary period.
AVG	Stores the average field value of all field values in the summary period. The average value is calculated using the following expression: (*total-sum-of-the-field-values*)/(*number-of-collected-records*) Additional field (Store database) • _TOTAL

Summary rule name	Summary rules
AVG	• _COUNT Additional field (PFM - Web Console) • (Total)
HILO	Stores the highest value, lowest value, and average value of all field values in the summary period. A record-specific field stores the average value. The highest value, lowest value, and average value is calculated using the following expression: (*total-sum-of-the-field-values*)/(*number-of-collected-records*) Additional field (Store database) • _HI • _LO • _TOTAL • _COUNT Additional field (PFM - Web Console) • (Max) • (Min) • (Total)
--	No summarization

List of data types

Table 5-5 lists the data types for field values and the corresponding C and C++ data types. The values shown in the *Format* column of the record field tables are those shown below in the *Field* column under *Data type*.

Table 5–5: List of data types

Data type		Byte	Description
Field	C and C++		
`char`(*n*)	`char`( )	Number in parentheses	Character data of *n* bytes.
`Double`	`double`	8	Numeric value (1.7E±308 (15 digits))
`Long`	`long`	4	Numeric value (-2,147,483,648 to 2,147,483,647)
`Short`	`short`	2	Numeric value (-32,768 to 32,767)
`string`(*n*)	`char`[ ]	Number in parentheses	Character string of *n* bytes. Japanese Windows: 7-bit ASCII and SJIS Simplified Chinese Windows: 7-bit ASCII and GB18030 Other language editions of Windows: only 7-bit ASCII Linux: 7-bit ASCII and either UTF-8 or GB18030 The last character is null.
`time_t`	`unsigned long`	4	Numeric value (0 to 4,294,967,295)
`Timeval`	Structure	8	Numeric value (first 4 bytes are seconds, next 4 bytes are microseconds)
`Ulong`	`unsigned long`	4	Numeric value (0 to 4,294,967,295)
`Ushort`	`unsigned short`	2	Numeric value (0 to 65,535)
`Utime`	Structure	8	Numeric value (first 4 bytes are seconds, next 4 bytes are microseconds)
`Word`	`unsigned short`	2	Numeric value (0 to 65,535)
(Not applicable)	`unsigned char`	1	Numeric value (0 to 255)

Field values

This section describes the values that are stored in the fields.

Data source

Each field contains a value obtained from a Performance Management product or program being monitored or the value derived there from by means of applying a formula. In the tables, the *Data source* column indicates the source of the value or the formula used to produce the value.

When a field's value is obtained by processing performance data acquired from Oracle, the character string in the *Data source* column indicates the method used to obtain the value that is set in the field. The following shows examples:

- When uppercase letters are shown:

  Uppercase letters indicate the table name of the Oracle Database when an Oracle Database is accessed. For example, the Cursor Open Hits (`CURSOR_OPEN_HITS`) field of the Activity Summary (`PD_PDAS`) record stores the value that is collected using OCI of Oracle. For details, see your Oracle documentation.
- When lowercase letters are shown:

  Lowercase letters indicate the key character string used to acquire the performance data that is stored in the Oracle Database table.

  For example, the Calls/Tran (`CALLS_PER_TRANSACTION`) field of the System Stat Summary (`PD`) record stores the value that is obtained by dividing the value obtained from `user calls` in the `Name` column of the `V$SYSSTAT` table by the value obtained from `user commits` in the Name column of the `V$SYSSTAT` table.
- When *Remote Monitor Collector* is shown:

  Remote Monitor Collector means that the value stored in the field was obtained from the *Remote Monitor Collector* service.
- When *init.ora parameter name* is shown:

  init.ora parameter name means that the value of the parameter name that is set in the `init.ora` Oracle initialization parameter file is used.
- When two dashes (--) are shown:

  Two dashes (--) means that the field's value is obtained without processing performance data.

Delta

In contrast to the data collected as the cumulative value, the so-called *delta* is the data that indicates the changed amount. For example, if the performance data value obtained during the first collection is 3 and the performance data value obtained during the second collection is 4, then the cumulative value is 7 and the changed amount is 1. In the tables, the Delta column indicates whether or not each field's value is a delta value. Note that since delta values are relative to previous data, they may be negative.

The following table explains the delta characteristics of performance data collected by PFM - RM for Oracle:

Table 5–6: Performance data collected by PFM - RM for Oracle

Record type	Delta	Data type	Indicate delta value#	Record value
PI record type	Yes	Real-time data	Selected	The displayed value is the changed amount.
			Not selected	The displayed value is the changed amount.

Record type	Delta	Data type	Indicate delta value#	Record value
PI record type	Yes	- Historical data - Alarm monitoring data	N/A	The displayed value is the changed amount.
	No	Real-time data	Selected	The displayed value was the actual value at the time of data collection.
			Not selected	The displayed value was the actual value at the time of data collection.
		- Historical data - Alarm monitoring data	N/A	The displayed value was the actual value at the time of data collection.
PD record type	Yes	Real-time data	Selected	The displayed value is the change.
			Not selected	The displayed value is the cumulative value.
		- Historical data - Alarm monitoring data	N/A	The displayed value is the cumulative value.
	No	Real-time data	Selected	The displayed value was the actual value at the time of data collection.
			Not selected	The displayed value was the actual value at the time of data collection.
		- Historical data - Alarm monitoring data	N/A	The displayed value was the actual value at the time of data collection.

Legend:

N/A: Not applicable

#

Indicates that the following check boxes are selected in the PFM - Web Console dialog box:

- **Indicate delta value** check box in the Report Wizard - Indication settings (Realtime) dialog box
- **Indicate delta value** check box in **Indication settings (Realtime)** on the **Properties** page of the Report window

The following points should be noted about collection of performance data:

- In order for a record of the PI record type to be saved, the performance data must be collected at least twice.

  For a record of the PI record type, performance data is collected at the interval set by PFM - Web Console. However, the performance data is not stored in the Store database when its collection is set by PFM - Web Console.

  Historical data for records of the PI record type requires two data collections in order to obtain the value (called delta) resulting from calculating the difference between two sets of data. Therefore, it takes up to twice as much time as the specified value before the historical data is stored in the Store database.

  For example, if PFM - Web Console sets the performance data collection interval at 300 seconds (5 minutes) at 18:32, the first data collection will begin at 18:35. The next data collection will begin at 18:40. Historical data is created from the data collected at 18:35 and 18:40, and is stored in the Store database as historical data at 18:40 (8 minutes after the time you entered the settings).

- In a real-time report, the value that is displayed is since the time the first data was collected. However, in reports requiring comparison with previous data, the initial values are shown as zero. Starting with the second cycle, the collection behavior depends on the type of report.
- The value of the collected data is displayed after the second data collection in the following cases:
  - The **Indicate delta value** check box is selected in the settings for real-time reports based on PI records.
  - The **Indicate delta value** check box is selected in the settings for real-time reports based on PD records.
- If the following setting is made, the difference between the first and second data collections is displayed at the second data collection; for the third and subsequent data collections, the value of the collected data is displayed when:
  - The **Indicate delta value** check box is selected in the settings for real-time reports based on PI records.
- While PFM - RM for Oracle is running, if a monitored instance of Oracle is restarted, or a resource is reallocated while Oracle is running, the value of collected data may be negative. Note that for data for the second and subsequent collections, positive values are used as the data differential.
- When a record of the PI record type is displayed in a real-time report, the first time collection data of the field where the delta field is Yes is invalid.

Fields added only when data is stored in the Store database

The following table lists the fields that are added only when data is stored in the Store database:

Table 5–7: Fields added only when data is stored in the Store database

PFM - View name (PFM - Manager name)	Description	Format	Delta	Supported versions	Data source
Agent Host (DEVICEID)	Name of host where PFM - RM for Oracle is running	string (256)	No	All	N/A
Agent Instance (PROD_INST)	Instance name of PFM - RM for Oracle	string (256)	No	All	N/A
Agent Type (PROD_ID)	Product ID of PFM - RM for Oracle (1-byte identifier)	char	No	All	N/A
Date (DATE)	Record creation date in (GMT)#1#2	char (3)	No	All	N/A
Date and Time (DATETIME)	Combination of the Date (DATE) and Time (TIME) fields#2	char (6)	No	All	N/A
Drawer Type (DRAWER_TYPE)	For a PI record, the data summarization type.	char	No	All	N/A
GMT Offset (GMT_ADJUST)	Difference (in seconds) between Greenwich Mean Time and local time	long	No	All	N/A
Time (TIME)	Record creation time (GMT)#1#2	char (3)	No	All	N/A

Legend:

N/A: The field value is specified without processing the performance data acquired from Oracle.

#1

A basic value is set because records of the PI record type are summarized. The following table shows the setting values for each record type.

Table 5–8: Setting value for each record type

Type	Setting value for each record type
Minute	0 second of the time when the record was created.
Hour	0 minute and 0 second of the time when the record was created.
Day	0:00 and 0 second of the day when the record was created.
Week	0:00 and 0 second on Monday of the week when the record was created.
Month	0:00 and 0 second on the 1st day of the month when the record was created.
Year	0:00 and 0 second on January 1st of the year when the record was created.

#2

When data is displayed in reports, the Date field is displayed in the format *YYYYMMDD*, the Date and Time field is displayed in the format *YYYYMMDD hh*:*mm*:*ss*, and the Time field is displayed in the format *hh*:*mm*:*ss*.

Fields output when data stored in the Store database is exported

When data stored in the Store database is exported by using the `jpctool db dump` command, the fields listed below are output. These fields are also added when data is stored in the Store database, but since they are used internally by PFM - RM for Oracle, they are not used as fields displayed in reports, and should not be used during operation.

- *Record ID*_DATE_F
- *Record ID*_DEVICEID_F
- *Record ID*_DRAWER_TYPE_F
- *Record ID*_DRAWER_COUNT
- *Record ID*_DRAWER_COUNT_F
- *Record ID*_INST_SEQ
- *Record ID*_PRODID_F
- *Record ID*_PROD_INST_F
- *Record ID*_RECORD_TYPE
- *Record ID*_RECORD_TYPE_F
- *Record ID*_SEVERITY
- *Record ID*_SEVERITY_F
- *Record ID*_TIME_F
- *Record ID*_UOWID
- *Record ID*_UOWID_F
- *Record ID*_UOW_INST
- *Record ID*_UOW_INST_F
- *Record ID_PFM - Manager name*_COUNT
- *Record ID_PFM - Manager name*_SEC
- *Record ID_PFM - Manager name*_MSEC

Notes on records

Note the following when collecting records.

Results of record generation when no data can be acquired

The following explains the results of record generation when no data can be acquired.

- No records are generated

  In the following cases, no records are created.

  - PFM - RM for Oracle cannot collect the performance data to be stored in a field that is defined as an ODBC key field.
  - PFM - RM for Oracle cannot collect the performance data to be stored in a field that shows Oracle performance.

List of records for PFM - RM for Oracle

This section lists the records that can be collected by PFM - RM for Oracle.

Table 5-10 lists the records that can be collected by PFM - RM for Oracle and the information that is stored in each record, in the order of record names and record IDs.

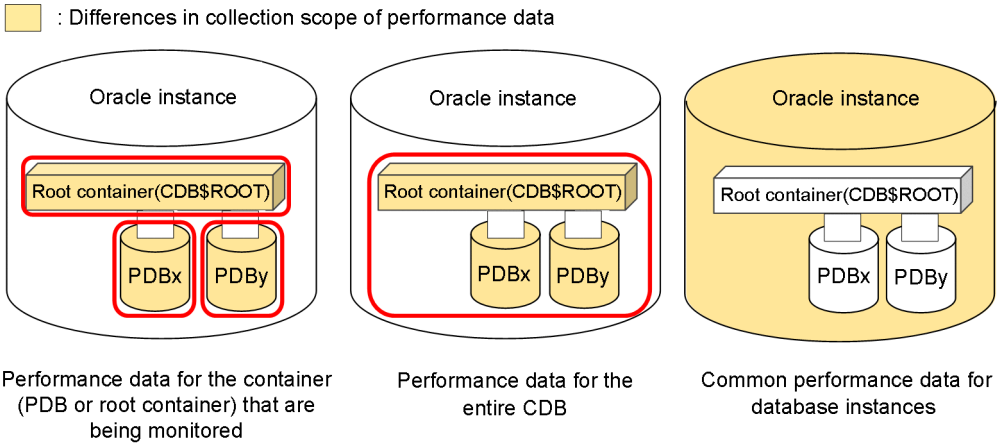
Note that if the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some records or fields collect the following performance data:

- Performance data for the PDBs and root container (`CDB$ROOT`) that are being monitored
- Performance data for all PDBs and common performance data for database instances

When monitoring a CDB configuration, the collection range of performance data might be different depending on the containers to be monitored and the fields to be acquired.

The following figures show differences in collection scope of performance data.

Figure 5–1: Differences in collection scope of performance data



Also, depending on containers and fields to be monitored, there are fields with precautions and fields that cannot collect effective performance data.

For details, see *Table 5-9* or the descriptions of each record field.

Table 5–9: List of records for PFM - RM for Oracle (record names)

Record name	Record ID	Information stored in record	Supported for monitoring		
			Non-CDB configuration #1	CDB configuration #2	
				PDB	Root container
Activity Summary	*PD_PDAS*	Performance data indicating the operating status (at a specific point in time) of the Oracle system	Y	Y#3	N
ASM Disk	*PD_PDDK*	Performance data indicating the status (at a specific point in time) of the ASM disk managed by the ASM instance through which Oracle communicates	Y	Y#4	Y#4

Record name	Record ID	Information stored in record	Supported for monitoring		
			Non-CDB configuration #1	CDB configuration #2	
				PDB	Root container
ASM Disk Group Interval	*PI_PIDG*	Performance data, taken at specific intervals, about the ASM disk group managed by the ASM instance through which Oracle communicates	Y	Y#4	Y#4
Collection Instance 2	*PD_PCI*	Performance data indicating the status (at a specific point in time) of an instance and the fast recovery area.	Y	Y#4	Y#4
Collection Tablespace 2	*PD_PCTS*	Performance data indicating the status (at a specific point in time) of tablespaces in a database	Y	N	N
Data File	*PD_PDDF*	Performance data indicating the status (at a specific point in time) of data files	Y	Y#5	N
Data File Interval	*PI_PIDF*	Performance data, taken at specific intervals, about data files	Y	Y#5	N
Database	*PD_PDDB*	Performance data, taken at a specific point in time, indicating the following: • General information about a database • Statistical information on tablespaces • Statistical information on data files	Y	Y#3	N
Database Interval	*PI_PIDB*	Performance data, taken at specific intervals, about a database.	Y	Y#3	N
Instance	*PD_PDI*	Performance data indicating the status (at a specific point in time) of an instance	Y	N	N
Instance Availability	*PD_PDIA*	Performance data indicating the status (at a specific point in time) of instance availability.	Y	Y#5	Y#6
Lock Waiters	*PD_PDLW*	Performance data indicating the status (at a specific point in time) of all sessions waiting for lock and all sessions holding lock	Y	Y#5	N
Minimum Database Interval 2	*PI_PMDB*	Performance data, taken at specific intervals, about a database	Y	N	N
Minimum Data File Interval 2	*PI_PMDF*	Performance data, taken at specific intervals, about data files	Y	N	N
Minimum Tablespace Interval 2	*PI_PMTS*	Performance data, taken at specific intervals, about tablespaces in a database	Y	N	N

Record name	Record ID	Information stored in record	Supported for monitoring		
			Non-CDB configuration #1	CDB configuration #2	
				PDB	Root container
Open Cursor	*PD_PDOC*	Performance data indicating the status (at a specific point in time) of cursors	Y	Y#5	N
Parameter Values	*PD_PDP*	Performance data indicating the status (at a specific point in time) of current parameter values	Y	N	N
Session Detail	*PD_PDS*	Performance data indicating the status (at a specific point in time) of sessions	Y	Y#3	N
Session I/O Interval	*PI_PIIO*	Performance data, taken at specific intervals, about input/output of all active sessions	Y	Y#3	N
Session Statistics Summary	*PD_PDS2*	Performance data indicating the status (at a specific point in time) of each session and performance indicator of an instance	Y	Y#3	N
SGA Components	*PD_PDSG*	Performance data indicating the status (at a specific point in time) of the system global area (SGA)	Y	Y#3	Y#7
SQL Text	*PD_PDSQ*	Performance data indicating the status (at a specific point in time) of the SQL text for a cursor in the shared cursor cache	Y	N	N
System Stat Summary	*PD*	Performance data indicating the status (at a specific point in time) of key performance indicators after the start of an instance	Y	Y#3	Y#4
System Stat Summary Interval	*PI*	Performance data, taken at specific intervals since the start of an instance, about key performance indicators	Y	Y#3	Y#4
Tablespace	*PD_PDTS*	Performance data indicating the status (at a specific point in time) of tablespaces in a database	Y	Y#5	Y#6
Tablespace Fragmentation	*PD_PDTF*	Performance data indicating the status (at a specific point in time) of fragmentation of tablespaces in a database	Y	Y#5	N
Tablespace Interval	*PI_PITS*	Performance data, taken at specific intervals, about tablespaces in a database	Y	Y#5	N
Transaction	*PD_PDTR*	Performance data indicating the status (at a specific point in time) of transactions	Y	Y#5	N
Transaction Lock	*PD_PDTL*	Performance data indicating the status (at a specific point in time) of transaction locks	Y	Y#5	N

Record name	Record ID	Information stored in record	Supported for monitoring		
			Non-CDB configuration #1	CDB configuration #2	
				PDB	Root container
Database Link	PD_PDDL	This record is reserved and unavailable.	N	N	N
Ping Activity Interval	PI_PIPP		N	N	N
SQL*Net Handler	PD_PDNH		N	N	N

Legend:

Y: Supported

N: Not supported

#1

Applicable to Oracle Database 12c Release 1 or earlier, or Oracle Database 12c Release 2 in a non-CDB configuration.

#2

The Oracle CDB configuration is supported as of Oracle Database 12c Release 2 or later. It is not supported for Oracle Database 12c Release 1.

#3

Performance data for the PDBs that are being monitored and common performance data for database instances are collected.

#4

Performance data for all PDBs and the root container (CDB$ROOT), and common performance data for database instances are collected.

#5

Performance data for the PDBs that are being monitored is collected.

#6

Performance data for the root container (CDB$ROOT) that is being monitored is collected.

#7

The root container (CDB$ROOT) that is being monitored is collected following performance data:

- Use administrative accounts (sys or system)

  Performance data for all PDBs and the root container (CDB$ROOT), and common performance data for database instances are collected.

- Use common user

  Performance data for the root container (CDB$ROOT), and common performance data for database instances are collected.

This is difference of setting for collecting PDB's performance data. For details, see your Oracle documentation.

Activity Summary (PD_PDAS)

Function

The Activity Summary (PD_PDAS) record stores performance data indicating the operating status (at a specific point in time) of the Oracle system.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some fields in this record collect common performance data for database instances. For details, see the descriptions of each field.

Default and changeable values

Item	Default value	Changeable
Collection Interval	300	Y
Collection Offset	30	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 1,125 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Active Transactions (ACTIVE_TRANSACTIONS)	Number of active transactions in active sessions[#8]	--	long	No	All	SUM(V$ROLLSTAT.XACTS)
Avg Wait (AVERAGE_WAIT)	Average wait time for all events in all sessions. In centiseconds (1/100 of a second).[#7]	--	ulong	No	All	AVG(V$SESSION_EVENT.AVERAGE_WAIT)
Avg Wait String (AVERAGE_WAIT_STRING)	Average wait time for all events in all sessions (character string). In seconds.[#7]	--	string(30)	No	All	AVG(V$SESSION_EVENT.AVERAGE_WAIT) / 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Cursor Open Hit % (CURSOR_OPEN_HIT_PERCENTAGE)	Percentage ratio of open cursors that were found during cursor search[#9]	--	double	No	All	V $SYSTEM_CURSOR_CACHE.HIT_RATIO * 100
Cursor Open Hits (CURSOR_OPEN_HITS)	Total cursor open hits[#9]	--	ulong	No	All	V $SYSTEM_CURSOR_CACHE.HITS
Cursor Opens (CURSOR_OPENS)	Total cursor opens[#9]	--	ulong	No	All	V $SYSTEM_CURSOR_CACHE.OPENS
DML Locks % (PERCENT_DML_LOCKS)	Percentage ratio of DML locks to the DML_LOCKS parameter value in the init.ora file[#7]	--	double	No	All	(COUNT(DBA_DML_LOCKS) / init.ora DML_LOCKS) * 100
DML Locks Held (DML_LOCKS_HELD)	Number of current DML locks[#7]	--	long	No	All	COUNT(DBA_DML_LOCKS)
Enqueue Resources % (PERCENT_ENQUEUE_RESOURCES)	Percentage ratio of locks to the value of the ENQUEUE_RESOURCES parameter in the init.ora file Always 0 if the monitoring target is Oracle 10g Release2 or later.	--	double	No	All	(COUNT(V $LOCK) where V $LOCK.LMODE is NOT NULL / init.ora ENQUEUE_RESOURCES) * 100
Locks Held (LOCKS_HELD)	Number of current locks[#7]	--	long	No	All	COUNT(V $LOCK) where V $LOCK.LMODE is NOT NULL
Open Cursors (OPEN_CURSORS)	Number of current open cursors[#8]	--	long	No	All	COUNT(V $OPEN_CURSOR)
Open Cursors % (PERCENT_OPEN_CURSORS)	Percentage ratio of open cursors to the value of the OPEN_CURSORS parameter in the init.ora file[#8]	--	double	No	All	(COUNT(V $OPEN_CURSOR) / init.ora OPEN_CURSORS) * 100
Processes (PROCESSES)	Number of current Oracle processes[#8]	--	ulong	No	All	COUNT(V $PROCESS)
Processes % (PERCENT_PROCESSES)	Percentage ratio of processes to the value of the PROCESSES	--	double	No	All	(COUNT(V $PROCESS) / init.ora

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Processes % (PERCENT_PROCESSES)	parameter in the init.ora file[#8]	--	double	No	All	PROCESSES) * 100
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDAS)	--	string(4)	No	All	Remote Monitor Collector
Session Events (SESSION_EVENTS)	Number of events queued by sessions[#7]	--	ulong	No	All	COUNT(V $SESSION_EVENT)
Session Waits (SESSION_WAITS)	Number of session waits[#7]	--	ulong	No	All	COUNT(V $SESSION_WAIT)
Sessions (SESSIONS)	Number of current sessions[#7]	--	ulong	No	All	COUNT(V $SESSION)
Sessions % (PERCENT_SESSIONS)	Percentage ratio of sessions to the value of the SESSIONS parameter in the init.ora file[#7]	--	double	No	All	(COUNT(V $SESSION) / init.ora SESSIONS) * 100
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
System Sessions (SESSIONS_SYSTEM)	Number of current system sessions[#7]	--	ulong	No	All	COUNT(V $SESSION) where V $SESSION.TYPE<>'USER'
Table Accesses (TABLE_ACCESSES)	Number of current table accesses[#7]	--	long	No	All	COUNT(V $ACCESS)
Time Waited (TIME_WAITED)	Total length of time that all sessions queued all events. In centiseconds (1/100 of a second). [#7]	--	double	No	All	SUM(V $SESSION_EVENT.TIME_WAITED)
Time Waited String (TIME_WAITED_STRING)	Total length of time that all sessions queued all events (character string). In seconds. [#7]	--	string(30)	No	All	SUM(V $SESSION_EVENT.TIME_WAITED) / 100
Total Timeouts (TOTAL_TIMEOUTS)	Total number of timeouts for all events in all sessions[#7]	--	ulong	No	All	SUM(V $SESSION_EVENT.TOTAL_TIMEOUTS)
Total Waits (TOTAL_WAITS)	Number of waits for all events in all sessions[#7]	--	ulong	No	All	SUM(V $SESSION_E

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Total Waits (TOTAL_WAITS)	Number of waits for all events in all sessions#7	--	ulong	No	All	VENT.TOTAL_WAITS)
Transactions % (PERCENT_TRANSACTIONS)	Percentage ratio of the number of transactions to the value of the TRANSACTIONS parameter in the init.ora file#8	--	double	No	All	(SUM(V$ROLLSTAT.XACTS) / init.ora TRANSACTION) * 100
User Sessions (SESSIONS_USER)	Number of current user sessions#7	--	ulong	No	All	COUNT(V$SESSION) where V$SESSION.TYPE = 'USER'
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

#7

Displays performance data for the PDBs that are being monitored and common performance data for database instances.

#8

Displays performance data for the PDBs that are being monitored.

#9

Displays performance data for the entire CDB.

ASM Disk (PD_PDDK)

Function

The ASM Disk (PD_PDDK) record stores performance data indicating the status (at a specific point in time) of the ASM disk, which is managed by the ASM instance through which Oracle communicates. This is a multi-instance record.

Notes

- The collection of ASM Disk (PD_PDDK) records is supported for ASM and Oracle Database if the versions of both are 11.2.0 or later. Collection is not supported in version 11.1.0 or earlier.
- Group Number becomes 0 and Disk Group Name is blank if no ASM disk group is mounted.
- If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, this record stores performance data for all ASM disks in the entire CDB, which are managed by the ASM instances through which Oracle communicates. The retrieved values will be same for both when monitoring PDBs and when monitoring the root container (CDB$ROOT).

Default and changeable values

Item	Default value	Changeable
Collection Interval	3600	Y
Collection Offset	260	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

- PD_PDDK_DISK_NUMBER
- PD_PDDK_GROUP_NUMBER

Lifetime

From creation to deletion of the ASM disk

Record size

- Fixed part: 935 bytes
- Variable part: 773 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Cold Mbytes Read (COLD_MBYTES_READ)	Size of data (in megabytes) read from the cold region	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.COLD_BYTES_READ / (1024 * 1024)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Cold Mbytes Written (COLD_MBYTES_WRITTEN)	Size of data (in megabytes) written to the cold region	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.COLD_BYTES_WRITTEN / (1024 * 1024)
Cold Reads (COLD_READS)	Number of reads from the cold region	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.COLD_READS
Cold Used Mbytes (COLD_USED_MBYTES)	Size of used area (in megabytes) in the cold region	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.COLD_USED_MB
Cold Writes (COLD_WRITES)	Number of writes to the cold region	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.COLD_WRITES
Create Date (CREATE_DATE)	Date the disk was added to the disk group	--	string(20)	No	Oracle 11g R2 or later	V$ASM_DISK.CREATE_DATE
Disk Group Name (DISK_GROUP_NAME)	Name of the group the disk belongs to. The value is blank if the disk does not belong to a group or the disk group is dismounted.	--	string(30)	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.NAME
Disk Name (NAME)	Disk name	--	string(30)	No	Oracle 11g R2 or later	V$ASM_DISK.NAME
Disk Number (DISK_NUMBER)	Number assigned to the disk in the disk group	--	ulong	No	Oracle 11g R2 or later	V$ASM_DISK.DISK_NUMBER
Fail Group (FAILGROUP)	Name of the fail group that includes the disk	--	string(30)	No	Oracle 11g R2 or later	V$ASM_DISK.FAILGROUP
Fail Group Type (FAILGROUP_TYPE)	Type of fail group	--	string(7)	No	Oracle 11g R2 or later	V$ASM_DISK.FAILGROUP_TYPE
Free % (PERCENT_FREE)	Percentage of unused disk space	--	double	No	Oracle 11g R2 or later	(V$ASM_DISK.FREE_MB / V$ASM_DISK.TOTAL_MB) * 100
Free Mbytes (FREE_MBYTES)	Size of unused disk space (in megabytes)	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.FREE_MB
Group Number (GROUP_NUMBER)	Number of the disk group that includes the disk. The value is 0 if the group is dismounted or the disk does not belong to a group.	--	ulong	No	Oracle 11g R2 or later	V$ASM_DISK.GROUP_NUMBER
Header Status (HEADER_STATUS)	Disk status	--	string(12)	No	Oracle 11g R2 or later	V$ASM_DISK.HEADER_STATUS

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Hot Mbytes Read (HOT_MBYTES_READ)	Size of data (in megabytes) read from the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_BYTES_READ / (1024 * 1024)
Hot Mbytes Written (HOT_MBYTES_WRITTEN)	Size of data (in megabytes) written to the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_BYTES_WRITTEN / (1024 * 1024)
Hot Reads (HOT_READS)	Number of reads from the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_READS
Hot Reads % (PERCENT_HOT_READS)	Percentage of reads from the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_READS / V $ASM_DISK.READS * 100
Hot Used % (PERCENT_HOT_USED)	Percentage of used area in the hot region	--	double	No	Oracle 11g R2 or later	(V $ASM_DISK.HOT_USED_MB / (V $ASM_DISK.HOT_USED_MB + V $ASM_DISK.COLD_USED_MB)) * 100
Hot Used Mbytes (HOT_USED_MBYTES)	Size of used area (in megabytes) in the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_USED_MB
Hot Writes % (PERCENT_HOT_WRITES)	Percentage of writes to the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_WRITES / V $ASM_DISK.WRITES * 100
Hot Writes (HOT_WRITES)	Number of writes to the hot region	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.HOT_WRITES
Label (LABEL)	Disk label	--	string(31)	No	Oracle 11g R2 or later	V$ASM_DISK.LABEL
Mode Status (MODE_STATUS)	Global status of the type of I/O request permitted for the disk	--	string(7)	No	Oracle 11g R2 or later	V $ASM_DISK.MODE_STATUS
Mount Date (MOUNT_DATE)	Date the disk was mounted	--	string(20)	No	Oracle 11g R2 or later	V $ASM_DISK.MOUNT_DATE
Mount Status (MOUNT_STATUS)	Status of the group the disk belongs to	--	string(7)	No	Oracle 11g R2 or later	V $ASM_DISK.MOUNT_STATUS
OS Mbytes (OS_MBYTES)	Disk size reported by the OS (in megabytes)	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.OS_MB
Path (PATH)	OS path	--	string(256)	No	Oracle 11g R2 or later	V$ASM_DISK.PATH

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Preferred Read (PREFERRED_READ)	Status of the preferred read fail group	--	string(1)	No	Oracle 11g R2 or later	V$ASM_DISK.PREFERRED_READ
Read Errs (READ_ERRS)	Number of I/O read errors for the disk	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.READ_ERRS
Read Mbytes (READ_MBYTES)	Size of data (in megabytes) read from the disk	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.BYTES_READ / (1024 * 1024)
Read Time (READ_TIME)	Total read request time for the disk in seconds. Set the TIMED_STATISTICS parameter in the init.ora file to TRUE to collect the value of this field.	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.READ_TIME
Reads (READS)	Number of I/O read requests for the disk	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.READS
Record Time (RECORD_TIME)	Time that collection of the performance data stored in the record finished	--	time_t	No	Oracle 11g R2 or later	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name. Always set to PDDK.	--	string(4)	No	Oracle 11g R2 or later	Remote Monitor Collector
Redundancy (REDUNDANCY)	Hardware redundancy of the disk	--	string(7)	No	Oracle 11g R2 or later	V$ASM_DISK.REDUNDANCY
Repair Timer (REPAIR_TIMER)	Remaining time until the disk is automatically deleted	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.REPAIR_TIMER
Sector Size (SECTOR_SIZE)	Physical block size in bytes	--	ushort	No	Oracle 11g R2 or later	V$ASM_DISK.SECTOR_SIZE
Start Time (START_TIME)	Start time for collection of the performance data stored in the record	--	time_t	No	Oracle 11g R2 or later	Remote Monitor Collector
State (STATE)	Global status of the disk in relation to the disk group	--	string(8)	No	Oracle 11g R2 or later	V$ASM_DISK.STATE
Total Mbytes (TOTAL_MBYTES)	Total disk capacity (in megabytes)	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.TOTAL_MB
UDID (UDID)	Unique device ID in the name returned by detection	--	string(64)	No	Oracle 11g R2 or later	V$ASM_DISK.UDID
Used Mbytes (USED_MBYTES)	Size of used disk space (in megabytes)	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.TOTAL_M

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Used Mbytes (USED_MBYTES)	Size of used disk space (in megabytes)	--	double	No	Oracle 11g R2 or later	B - V $ASM_DISK.FREE_MB
VA DeviceID (VADEVICEID)	Device ID of the virtual agent	--	string(256)	No	Oracle 11g R2 or later	Remote Monitor Collector
Voting File (VOTING_FILE)	Indicates whether a voting file is included in the disk. Y is set if the voting file is included. In other cases, N is set.	--	string(1)	No	Oracle 11g R2 or later	V $ASM_DISK.VOTING_FILE
Write Errs (WRITE_ERRS)	Number of disk write errors	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.WRITE_ERRS
Write Time (WRITE_TIME)	Total write request time to the disk in seconds. Set the TIMED_STATISTICS parameter in the init.ora file to TRUE to collect the value of this field.	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.WRITE_TIME
Writes (WRITES)	Number of I/O write requests to the disk	--	double	No	Oracle 11g R2 or later	V$ASM_DISK.WRITES
Written Mbytes (WRITTEN_MBYTES)	Size of data written to the disk (in megabytes)	--	double	No	Oracle 11g R2 or later	V $ASM_DISK.BYTES_WRITTEN / (1024 * 1024)

ASM Disk Group Interval (PI_PIDG)

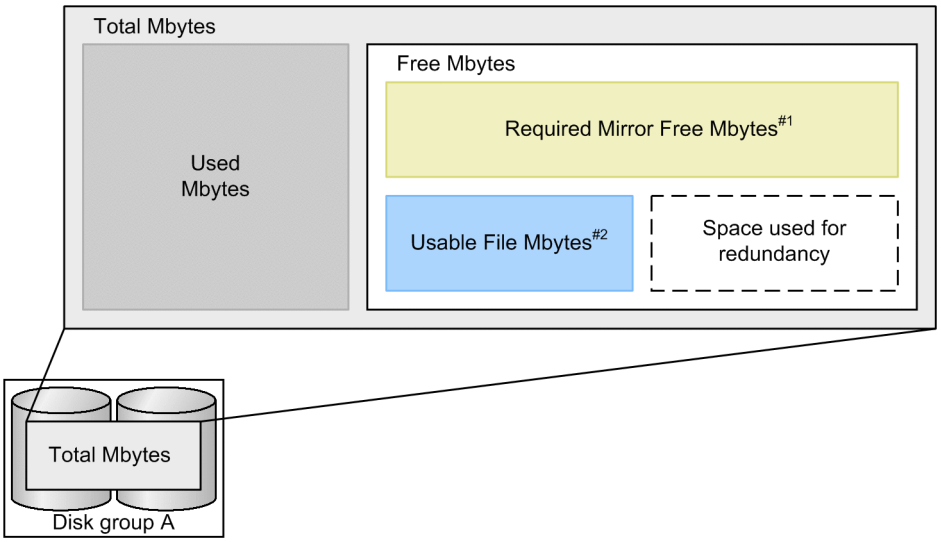
Function

The ASM Disk Group Interval (PI_PIDG) record stores, at specific intervals, the performance data of the ASM disk managed by the ASM instance through which Oracle communicates. This is a multi-instance record.

To use this record to monitor the free space in a non-mirrored configuration, we recommend monitoring the Free Mbyte field. In a mirrored configuration, we recommend monitoring the Usable File Mbytes field.

Using an ASM disk group with a redundant mirroring configuration as an example, the field configuration pertaining to the free space in the ASM Disk Group Interval (PI_PIDG) is shown in the following figure.

Figure 5–2: Field configuration pertaining to the free space in the ASM Disk Group Interval (PI_PIDG) record



#1

If a failure occurs in a mirrored ASM disk group, this capacity is needed for recovery. If this capacity is insufficient when a failure occurs, recovery might be impossible.

#2

This shows the space that can be used in a mirroring configuration. This is the value obtained by subtracting the Required Mirror Free Mbytes value from the Free Mbytes value. In a redundant (duplicated) mirroring configuration, if the difference is 4 gigabytes, the Usable File Mbytes value is halved (2 gigabytes).

If this capacity is insufficient, a new file might not be created, or file redundancy might not be maintained.

Depending on the values of the Free Mbyte and Required Mirror Free Mbytes fields, the capacity might be a negative value.

Notes

- The collection of the ASM Disk Group Interval (PI_PIDG) record is supported when the versions of both ASM and Oracle Database are 11.2.0 or later. Collection is not supported in version 11.1.0 or earlier.
- The capacity of the ASM disk group is calculated from the online ASM disks. As a result, the original capacity cannot be collected if any offline ASM disks exist.
- If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, this record stores performance data for all ASM disk group in the entire CDB, which are managed by the ASM instances through which Oracle communicates. The retrieved values will be same for both when monitoring PDBs and when monitoring the root container (CDB$ROOT).

Default and changeable values

Item	Default value	Changeable
Collection Interval	3600	Y
Collection Offset	260	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PI_PIDG_NAME

Lifetime

From creation to deletion of the ASM disk group

Record size

- Fixed part: 935 bytes
- Variable part: 280 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Allocation Unit Size (ALLOCATION_UNIT_SIZE)	Size of the allocation unit in bytes	COPY	ulong	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.ALLOCATION_UNIT_SIZE
Cold Used Mbytes (COLD_USED_MBYTES)	Size of used area (in megabytes) in the cold region	AVG	double	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.COLD_USED_MB
Free % (FREE_PERC)	Percentage of free space in the disk group	AVG	double	No	Oracle 11g R2 or later	(FREE_MBYTES / TOTAL_MBYTES) * 100
Free Mbytes (FREE_MBYTES)	Size of unused area (in megabytes) of the disk group	AVG	double	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.FREE_MB
Group Number (GROUP_NUMBER)	Cluster number assigned to the disk group	COPY	ulong	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.GROUP_NUMBER
Hot Used % (PERCENT_HOT_USED)	Percentage of use in the hot region	AVG	double	No	Oracle 11g R2 or later	(V$ASM_DISKGROUP.HOT_USED_MB / (V$ASM_DISKGROUP.HOT_USED_MB + V$ASM_DISKGROUP.COLD_USED_MB)) * 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Hot Used Mbytes (HOT_USED_MBYTES)	Size of used area (in megabytes) in the hot region	AVG	double	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.HOT_USED_MB
Name (NAME)	Disk group name	COPY	string(30)	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.NAME
Offline Disks (OFFLINE_DISKS)	Number of offline disks in the disk group	AVG	long	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.OFFLINE_DISKS
Record Time (RECORD_TIME)	Time that collection of the performance data stored in the record finished	COPY	time_t	No	Oracle 11g R2 or later	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PIDG)	COPY	string(4)	No	Oracle 11g R2 or later	Remote Monitor Collector
Required Mirror Free Mbytes (REQUIRED_MIRROR_FREE_MBYTES)	Capacity (in megabytes) needed for recovery	AVG	double	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.REQUIRED_MIRROR_FREE_MB
Restore Area Lack (RESTORE_AREA_LACK)	Indicates whether the capacity is sufficient for recovery. 1 is set if the capacity is insufficient. 0 is set if the capacity is sufficient.	COPY	short	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.FREE_MB >= V$ASM_DISKGROUP.REQUIRED_MIRROR_FREE_MB
Sector Size (SECTOR_SIZE)	Physical block size in bytes	COPY	ushort	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.SECTOR_SIZE
Start Time (START_TIME)	Start time for collection of the performance data stored in the record	COPY	time_t	No	Oracle 11g R2 or later	Remote Monitor Collector
State (STATE)	Disk group status	COPY	string(11)	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.STATE
Total Mbytes (TOTAL_MBYTES)	Total capacity of the disk group (in megabytes)	AVG	double	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.TOTAL_MB
Type (TYPE)	Redundancy type of the disk group	COPY	string(6)	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.TYPE
Usable File Mbytes (USABLE_FILE_MBYTES)	Free space (in megabytes) that can be used in a mirroring configuration. This value can be negative.	AVG	double	No	Oracle 11g R2 or later	V$ASM_DISKGROUP.USABLE_FILE_MB
Usable File Free % (USABLE_PERC)	Percentage of space necessary for restoration. When this percentage turns	AVG	double	No	Oracle 11g R2 or later	(USABLE_FILE_MBYTES / TOTAL_MBYTES) * 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Usable File Free % (USABLE_PERC)	out to be a negative value, 0 is displayed instead.	AVG	double	No	Oracle 11g R2 or later	(USABLE_FILE_MBYTES / TOTAL_MBYTES) * 100
Used Mbytes (USED_MBYTES)	Size of used area (in megabytes) of the disk group	AVG	double	No	Oracle 11g R2 or later	V $ASM_DISKGROUP.TOTAL_MB - V $ASM_DISKGROUP.FREE_MB
VA DeviceID (VADEVICEID)	Device ID of the virtual agent	--	string(256)	No	Oracle 11g R2 or later	Remote Monitor Collector
Voting Files (VOTING_FILES)	Indicates whether a voting file is included in the disk group. Y is set if the voting file is included. In other cases, N is set.	COPY	string(1)	No	Oracle 11g R2 or later	V $ASM_DISKGROUP.VOTING_FILES

Collection Instance 2 (PD_PCI)

Function

The Collection Instance 2 (PD_PCI) record stores performance data indicating the status (at a specific point in time) of an instance.

Notes

This record collects the status of the fast recovery area managed by the Oracle Database.

If Oracle Database 12c R2 or later is monitored in a CDB configuration, the same values are collected regardless of whether it is the root container (CDB$ROOT) or the PDBs that are being monitored.

Default and changeable values

Item	Default Value	Changeable
Collection Interval	600	Y
Collection Offset	40	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC Key Fields

None

Lifetime

From the creation to the deletion of an Oracle instance

Record Size

- Fixed part: 1,866 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Host (HOST)	Instance's host machine name	--	string(64)	No	All	V$INSTANCE.HOST_NAME
ORACLE_HOME (ORACLE_HOME)	ORACLE_HOME environment variable	--	string(255)	No	All	--
ORACLE_SID (ORACLE_SID)	ORACLE_SID environment variable	--	string(30)	No	All	--
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Record Type (INPUT_RECORD_TYPE)	Record name (always PCI)	--	string(4)	No	All	Remote Monitor Collector
Recovery File Dest (RECOVERY_FILE_DEST)	Location of the fast recovery area	--	string(513)	No	All	V$RECOVERY_FILE_DEST.NAME
Recovery Space Limit (RECOVERY_LIMIT)	Maximum size of the fast recovery area in megabytes	--	double	No	All	V$RECOVERY_FILE_DEST.SPACE_LIMIT / (1024 * 1024)
Recovery Space Used (RECOVERY_USED)	Used space of the fast recovery area in megabytes	--	double	No	All	V$RECOVERY_FILE_DEST.SPACE_USED / (1024 * 1024)
Recovery Space Reclaimable (RECOVERY_RECLAIMABLE)	Size of obsolete, redundant, and other low priority files from the fast recovery area in megabytes	--	double	No	All	V$RECOVERY_FILE_DEST.SPACE_RECLAIMABLE / (1024 * 1024)
Recovery File Nums (RECOVERY_FILES)	Number of files in the fast recovery area	--	ulong	No	All	V$RECOVERY_FILE_DEST.NUMBER_OF_FILES
Recovery Space Free Mbytes (RECOVERY_FREE_MB)	Free space in the fast recovery area in megabytes. When RECOVERY_LIMIT is 0, 0 is displayed.	--	double	No	All	RECOVERY_LIMIT - RECOVERY_USED
Recovery Space Free % (RECOVERY_FREE_RATIO)	Percentage of free space in the fast recovery area. When RECOVERY_LIMIT is 0, 100 is displayed.	--	double	No	All	((RECOVERY_LIMIT - RECOVERY_USED) / RECOVERY_LIMIT) * 100
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Version (VERSION)	Version of Oracle database 0 is set in lower than revision, if the monitoring target is Oracle Database 18c or later.	--	string(20)	No	All	PRODUCT_COMPONENT_VERSION

Collection Tablespace 2(PD_PCTS)

Function

The Collection Tablespace 2 (PD_PCTS) record stores performance data indicating the status (at a specific point in time) of tablespaces in a database. PFM - RM for Oracle creates one record for each transaction. This is a multi-instance record.

Default and changeable values

Item	Default Value	Changeable
Collection Interval	3600	Y
Collection Offset	30	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC Key Fields

PD_PCTS_TABLESPACE_NAME

Lifetime

From the creation to the deletion of a tablespace

Record Size

- Fixed part: 935 bytes
- Variable part: 47 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Free Mbytes (FREE_BYTES)	Remaining free space in megabytes.	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYT

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Free Mbytes (FREE_BYTES)	Remaining free space in megabytes.	--	double	No	All	ES) / (1024 * 1024) • For locally managed temporary tablespace when the value of localtemp_option is Y: SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_MAP.BYTES) / (1024 * 1024) • For locally managed temporary tablespace when the value of localtemp_option is N: SUM(V$TEMP_SPACE_HEADER.BYTES_FREE)) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 **x** 1024)
Mbytes (BYTES)	Size of tablespace in megabytes	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed tablespaces, or dictionary managed temporary tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Mbytes (BYTES)	Size of tablespace in megabytes	--	double	No	All	SUM(DBA_DATA_FILES.BYTES) / (1024 * 1024) • For locally managed temporary tablespaces: SUM(DBA_TEMP_FILES.BYTES) / (1024 * 1024)
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PCTS)	--	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Tablespace Name (TABLESPACE_NAME)	Tablespace name	--	string(30)	No	All	DBA_TABLESPACES.TABLESPACE_NAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent	--	string(256)	No	All	Remote Monitor Collector

Data File (PD_PDDF)

Function

The Data File (PD_PDDF) record stores performance data indicating the status (at a specific point in time) of data files. PFM - RM for Oracle creates one record for each data file in the database. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	300	Y
Collection Offset	10	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

- PD_PDDF_FILE_NUM
- PD_PDDF_NAME

Lifetime

From the creation to the deletion of a data file

Record size

- Fixed part: 935 bytes
- Variable part: 672 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Blocks (BLOCKS)	Oracle block size	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: DBA_DATA_FILES.BLOCKS • For locally managed temporary tablespaces: DBA_TEMP_FILES.BLOCKS

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Checkpoint Change # (CHECKPOINT_CHANGE_NUM)	System change number (SCN) at the last checkpoint	--	double	No	All	V$DATAFILE.CHECKPOINT_CHANGE#
Enabled (ENABLED)	This field contains one of the following values as the method for accessing a file using SQL: DISABLED READ ONLY READ WRITE UNKNOWN	--	string(10)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$DATAFILE.ENABLED • For locally managed temporary tablespaces: V$TEMPFILE.ENABLED
File # (FILE_NUM)	File identification number	--	ulong	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$DATAFILE.FILE# • For locally managed temporary tablespaces: V$TEMPFILE.FILE#
File Name (NAME)	File name	--	string(513)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$DATAFILE.NAME • For locally managed temporary tablespaces: V$TEMPFILE.NAME

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free % (PERCENT_FREE)	Percentage ratio of free space	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: (SUM(DBA_FREE_SPACE.BYTES) / V$DATAFILE.BYTES) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is Y: ((V$TEMPFILE.BYTES - V$TEMP_EXTENT_POOL.BYTES_USED) / V$TEMPFILE.BYTES) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is N: (V$TEMP_SPACE_HEADER / V$TEMPFILE.BYTES) * 100 • For the UNDO tablespaces when the value of undospace_option is Y: ((SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / V$DATAFILE.BYTES) * 100
Free Mbytes (FREE)	Size of free space in megabytes	--	double	No	All	• For dictionary managed permanent

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Mbytes (FREE)	Size of free space in megabytes	--	double	No	All	tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (V$TEMPFILE.BYTES - V$TEMP_EXTENT_POOL.BYTES_USED) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: (V$TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 x 1024)
MBytes (BYTES)	Disk space in megabytes required on the file system	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
MBytes (BYTES)	Disk space in megabytes required on the file system	--	double	No	All	V $DATAFILE.BYTES / (1024 * 1024) • For locally managed temporary tablespaces: V $TEMPFILE.BYTES / (1024 * 1024)
Physical Blocks Read (PHYSICAL_BLOCKS_READ)	Number of physical block read operations	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYBLKRD • For locally managed temporary tablespaces: V $TEMPSTAT.PHYBLKRD
Physical Blocks Written (PHYSICAL_BLOCKS_WRITTEN)	Number of physical block write operations	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYBLKWRT • For locally managed temporary tablespaces: V $TEMPSTAT.PHYBLKWRT
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed	--	double	No	All	V$FILESTAT.PHYRDS • For locally managed temporary tablespaces: V$TEMPSTAT.PHYRDS
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations that were completed	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.PHYWRTS • For locally managed temporary tablespaces: V$TEMPSTAT.PHYWRTS
Read Time (READ_TIME)	Read operation time. In centiseconds (1/100 of a second).	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.READTIM • For locally managed temporary tablespaces: V$TEMPSTAT.READTIM
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDDF)	--	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance	--	time_t	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Start Time (START_TIME)	data stored in the record	--	time_t	No	All	Remote Monitor Collector
Status (STATUS)	File type (system file or user file) and file status (OFFLINE, SYSOFF, ONLINE, SYSTEM, or RECOVER)	--	string(7)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.STATUS • For locally managed temporary tablespaces: V $TEMPFILE.STATUS
Tablespace Name (TABLESPACE_NAME)	Tablespace name associated with the file	--	string(30)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: DBA_DATA_FILES.TABLESPACE_NAME • For locally managed temporary tablespaces: DBA_TEMP_FILES.TABLESPACE_NAME
Used Mbytes (USED)	Size of used area in megabytes	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: (V $DATAFILE.BYTES - SUM(DBA_FREE_SPACE.BYTES)) / (1024 * 1024)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Used Mbytes (USED)	Size of used area in megabytes	--	double	No	All	• For locally managed temporary tablespaces when the value of localtemp_option is Y: (V $TEMPFILE.BYTES - (V $TEMPFILE.BYTES - V $TEMP_EXTENT_POOL.BYTES_USED)) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: (V $TEMPFILE.BYTES - V $TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (V $DATAFILE.BYTES - SUM(DBA_FREE_SPACE.BYTES) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
VA DeviceID (VADEVICEID)	Device ID of virtual agent	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: (V $FILESTAT.PHYWRTS / (V

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations	--	double	No	All	$FILESTAT.PHYRDS + V $FILESTAT.PHYWRTS)) * 100 • For locally managed temporary tablespaces: ((V $TEMPSTAT.PHYWRTS / (V $TEMPSTAT.PHYRDS + V $TEMPSTAT.PHYWRTS)) * 100
Write Time (WRITE_TIME)	Write operation time. In centiseconds (1/100 of a second).	--	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.WRITETIM • For locally managed temporary tablespaces: V $TEMPSTAT.WRITETIM

Data File Interval (PI_PIDF)

Function

The Data File Interval (PI_PIDF) record stores performance data, taken at specific intervals, about data files. PFM - RM for Oracle creates one record for each data file in the database. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	300	Y
Collection Offset	40	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

- PI_PIDF_FILE_NUM
- PI_PIDF_NAME

Lifetime

From the creation to the deletion of a data file

Record size

- Fixed part: 935 bytes
- Variable part: 892 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Blocks (BLOCKS)	Oracle block size [#1]	COPY	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: DBA_DATA_FILES.BLOCKS • For locally managed temporary tablespaces: DBA_TEMP_FILES.BLOCKS

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Checkpoint Change # (CHECKPOINT_CHANGE_NUM)	System change number (SCN) at the last checkpoint #1	COPY	double	No	All	V $DATAFILE.CHECKPOINT_CHANGE#
Enabled (ENABLED)	This field contains one of the following values as the method for accessing a file using SQL: DISABLED READ ONLY READ WRITE UNKNOWN	COPY	string(10)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.ENABLED • For locally managed temporary tablespaces: V $TEMPFILE.ENABLED
File # (FILE_NUM)	File identification number #1	COPY	ulong	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.FILE# • For locally managed temporary tablespaces: V $TEMPFILE.FILE#
File Name (NAME)	File name #1	COPY	string(513)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.NAME • For locally managed temporary tablespaces: V $TEMPFILE.NAME

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free % (PERCENT_FREE)	Percentage ratio of free space [#2]	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: (SUM(DBA_FREE_SPACE.BYTES) / V$DATAFILE.BYTES) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is Y: ((V$TEMPFILE.BYTES - V$TEMP_EXTENT_POOL.BYTES_USED) / V$TEMPFILE.BYTES) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is N: (V$TEMP_SPACE_HEADER / V$TEMPFILE.BYTES) * 100 • For the UNDO tablespaces when the value of undospace_option is Y: ((SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / V$DATAFILE.BYTES) * 100
Free Change (FREE_CHANGE)	Change to the free space (the	AVG	double	No	All	• For dictionary managed permanent

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Change (FREE_CHANGE)	difference between the value obtained this time and the value obtained the last time) in megabytes[#2]	AVG	double	No	All	tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (V $TEMPFILE.BYTES - V $TEMP_EXTENT_POOL.BYTES_USED) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: (V $TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 x 1024)
Free Mbytes (FREE_BYTES)	Size of free space in megabytes [#2]	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Mbytes (FREE_BYTES)	Size of free space in megabytes [#2]	AVG	double	No	All	when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (V$TEMPFILE.BYTES - V$TEMP_EXTENT_POOL.BYTES_USED) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: (V$TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
I/O Ops/sec (IO_RATE)	Number of I/O operations per second[#2]	AVG	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: (V$FILESTAT.PHYRDS + V$FILESTAT.PHYWRTS) / *seconds-in-interval*

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
I/O Ops/sec (IO_RATE)	Number of I/O operations per second[#2]	AVG	double	No	All	• For locally managed temporary tablespaces: (V $TEMPSTAT.PHYRDS + V $TEMPSTAT.PHYWRTS) / *seconds-in-interval*
Mbytes (BYTES)	Disk space in megabytes required on the file system[#1]	COPY	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.BYTES / (1024 * 1024) • For locally managed temporary tablespaces: V $TEMPFILE.BYTES / (1024 * 1024)
Physical Blocks Read (PHYSICAL_BLOCKS_READ)	Number of physical block write operations during the interval[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYBLKRD • For locally managed temporary tablespaces: V $TEMPSTAT.PHYBLKRD
Physical Blocks Written (PHYSICAL_BLOCKS_WRITTEN)	Number of physical block read operations during the interval[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Physical Blocks Written (PHYSICAL_BLOCKS_WRITTEN)	Number of physical block read operations during the interval[#2]	AVG	double	Yes	All	V$FILESTAT.PHYBLKWRT • For locally managed temporary tablespaces: V$TEMPSTAT.PHYBLKWRT
Physical Reads (PHYSICAL_READS)	Number of physical block read operations that were completed during the interval[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.PHYRDS • For locally managed temporary tablespaces: V$TEMPSTAT.PHYRDS
Physical Writes (PHYSICAL_WRITES)	Number of physical block write operations that were completed during the interval[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.PHYWRTS • For locally managed temporary tablespaces: V$TEMPSTAT.PHYWRTS
Read Time (READ_TIME)	If the value of the TIMED_STATISTICS parameter in the init.ora file is TRUE, this field indicates the read operation time during the interval. If the parameter value is FALSE, this field contains 0. In	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.READTIM

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Read Time (READ_TIME)	centiseconds (1/100 of a second).[#2]	AVG	double	Yes	All	• For locally managed temporary tablespaces: V $TEMPSTAT.READ TIM
Reads/sec (READ_RATE)	Number of read operations per second[#2]	AVG	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYR DS / *seconds-in-interval* • For locally managed temporary tablespaces: V $TEMPSTAT.PHYR DS / *seconds-in-interval*
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PIDF)[#1]	COPY	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
Status (STATUS)	File type (system file or user file) and file status (OFFLINE, SYSOFF, ONLINE, SYSTEM, or RECOVER)[#1]	COPY	string(7)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.STAT US • For locally managed temporary tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Status (STATUS)	File type (system file or user file) and file status (OFFLINE, SYSOFF, ONLINE, SYSTEM, or RECOVER)#1	COPY	string(7)	No	All	V$TEMPFILE.STATUS
Tablespace Name (TABLESPACE_NAME)	Tablespace name associated with the file #1	COPY	string(30)	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: DBA_DATA_FILES.TABLESPACE_NAME • For locally managed temporary tablespaces: DBA_TEMP_FILES.TABLESPACE_NAME
Used Change (USED_CHANGE)	Change to the used space in megabytes. #2	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: (V$DATAFILE.BYTES - SUM(DBA_FREE_SPACE.BYTES)) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (V$TEMPFILE.BYTES - (V$TEMPFILE.BYTES - V$TEMP_EXTENT_POOL.BYTES_USED)) / (1024 * 1024)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Used Change (USED_CHANGE)	Change to the used space in megabytes. #2	AVG	double	No	All	• For locally managed temporary tablespaces when the value of localtemp_option is N: (V $TEMPFILE.BYTES - V $TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (V $DATAFILE.BYTES - SUM(DBA_FREE_SPACE.BYTES) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
Used Mbytes (USED_BYTES)	Size of used area (the difference between the value obtained this time and the value obtained the last time) in megabytes #2	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: (V $DATAFILE.BYTES - SUM(DBA_FREE_SPACE.BYTES)) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (V $TEMPFILE.BYTES - (V $TEMPFILE.BYTES - V $TEMP_EXTENT_P

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Used Mbytes (USED_BYTES)	Size of used area (the difference between the value obtained this time and the value obtained the last time) in megabytes #2	AVG	double	No	All	OOL.BYTES_USED)) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: (V $TEMPFILE.BYTES - V $TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (V $DATAFILE.BYTES - SUM(DBA_FREE_SPACE.BYTES) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations #2	AVG	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: (V $FILESTAT.PHYWRTS / (V $FILESTAT.PHYRDS + V $FILESTAT.PHYWRTS)) * 100 • For locally managed temporary tablespaces: ((V $TEMPSTAT.PHYWRTS / (V $TEMPSTAT.PHYRDS + V

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations [#2]	AVG	double	No	All	$TEMPSTAT.PHYWRTS)) * 100
Write Time (WRITE_TIME)	If the value of the TIMED_STATISTICS parameter in the init.ora file is TRUE, this field indicates the write operation time during the interval. If the parameter value is FALSE, this field contains 0. In centiseconds (1/100 of a second).[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.WRITETIM • For locally managed temporary tablespaces: V$TEMPSTAT.WRITETIM
Writes/sec (WRITES_RATE)	Number of write operations per second[#2]	AVG	double	No	All	• For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.PHYWRTS / *seconds-in-interval* • For locally managed temporary tablespaces: V$TEMPSTAT.PHYWRTS / *seconds-in-interval*

Database (PD_PDDB)

Function

The Database (PD_PDDB) record stores performance data, taken at a specific point in time, indicating the following:

- General information about a database
- Statistical information on tablespaces
- Statistical information on data files

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some fields in this record include information of performance data for the PDBs that are being monitored and common performance data for database instances. For details, see the descriptions of each field.

Default and changeable values

Item	Default value	Changeable
Collection Interval	3600	Y
Collection Offset	20	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of a database

Record size

- Fixed part: 1,179 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Archive Change # (ARCHIVE_CHANGE_NUM)	Last archived system change number (SCN)[#10]	--	double	No	All	V$DATABASE.ARCHIVE_CHANGE#
Blocks (BLOCKS)	Size of tablespace in Oracle blocks[#8]	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: SUM(DBA_DATA_FILES.BLOCKS)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Blocks (BLOCKS)	Size of tablespace in Oracle blocks[#8]	--	double	No	All	• For Oracle that has locally managed temporary tablespaces: SUM(DBA_DATA_FILES.BLOCKS) + SUM(DBA_TEMP_FILES.BLOCKS)
Checkpoint Change # (CHECKPOINT_CHANGE_NUM)	System change number (SCN) at the last checkpoint[#10]	--	double	No	All	V$DATABASE.CHECKPOINT_CHANGE#
Created (CREATED)	Creation date[#10]	--	string(20)	No	All	V$DATABASE.CREATED
Datafiles (DATAFILES)	Number of data files[#8]	--	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(V$DATAFILE) COUNT(V$DATAFILE) • For Oracle that has locally managed temporary tablespaces: COUNT(V$DATAFILE) + COUNT(DBA_TEMP_FILES)
DB Files % (PERCENT_DB_FILES)	Percentage ratio of the data files to the DB_FILES parameter value in the init.ora file[#8]	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: (COUNT(V$DATAFILE) / init.ora DB_FILES) * 100 • For Oracle that has locally managed temporary tablespaces: ((COUNT(V$DATAFILE) + COUNT(DBA_TEMP_FILES)) / init.ora DB_FILES) * 100
DB Name (NAME)	Database name[#10]	--	string(9)	No	All	V$DATABASE.NAME

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Extents (EXTENTS)	Correct values cannot be collected in this field. Number of extents.	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: SUM(DBA_SEGMENTS.EXTENTS) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: SUM(DBA_SEGMENTS.EXTENTS) + SUM(DBA_TEMP_FILES.BYTES / V$TEMP_EXTENT_MAP.BYTES) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: SUM(DBA_SEGMENTS.EXTENTS) + SUM(V$SORT_SEGMENT.TOTAL_EXTENTS)
Free % (PERCENT_FREE)	Percentage ratio of free space[#8]	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces or has UNDO tablespaces when the value of undospace_option is N: (SUM(DBA_FREE_SPACE.BYTES) / DBA_DATA_FILES.BYTES) * 100 • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_TEMP_

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free % (PERCENT_FREE)	Percentage ratio of free space[#8]	--	double	No	All	FILES.BYTES) - (V $SORT_SEGMENT .USED_EXTENTS * AVG(V $TEMP_EXTENT_ MAP.BYTES))) / (DBA_DATA_FIL ES.BYTES + DBA_TEMP_FILE S.BYTES)) * 100 • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: ((SUM(DBA_FRE E_SPACE.BYTES) + SUM(V $TEMP_SPACE_H EADER.BYTES_F REE)) / (DBA_DATA_FIL ES.BYTES + DBA_TEMP_FILE S.BYTES)) * 100 • For the UNDO tablespaces when the value of undospace_option is Y: ((SUM(DBA_FRE E_SPACE.BYTES) + SUM(DBA_UNDO_ EXTENTS.BYTES) WHERE STATUS='EXPIR ED') / DBA_DATA_FILE S.BYTES) * 100
Free Extents (FREE_EXTENTS)	Number of free extents[#8]	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_FRE E_SPACE) • For Oracle that has locally managed temporary tablespaces when the value of

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Extents (FREE_EXTENTS)	Number of free extents[#8]	--	double	No	All	localtemp_option is Y: COUNT(DBA_FREE_SPACE) + SUM(DBA_TEMP_FILES.BYTES / V$TEMP_EXTENT_MAP.BYTES) - V$SORT_SEGMENT.USED_EXTENTS • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: COUNT(DBA_FREE_SPACE) + COUNT(V$TEMP_SPACE_HEADER)
Free Mbytes (FREE_BYTES)	Size of free space in megabytes[#8]	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces or has UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) / (1024 * 1024) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_MAP.BYTES))) / (1024 * 1024) • For Oracle that has locally managed temporary

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Mbytes (FREE_BYTES)	Size of free space in megabytes[#8]	--	double	No	All	tablespaces when the value of localtemp_option is N: (SUM(DBA_FREE_SPACE.BYTES) + SUM(V$TEMP_SPACE_HEADER.BYTES_FREE)) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 x 1024)
High Max Extents (HIGH_MAX_EXTENTS)	Correct values cannot be collected in this field. Number of segments whose PCT_MAX_EXTENTS value exceeds 90%.	--	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where DBA_SEGMENTS.EXTENTS > 0.9 * DBA_SEGMENTS.MAX_EXTENTS • For Oracle that has locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where DBA_SEGMENTS.EXTENTS > 0.9 * DBA_SEGMENTS.MAX_EXTENTS + COUNT(V$SORT_SEGMENT) where V$SORT_SEGMENTS.TOTAL_EXTENTS > 0.9 * V$SORT_SEGMENT.MAX_SIZE
Links (LINKS)	This field is not supported.	--	ulong	No	Not supported	COUNT(V$DBLINK)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Links (LINKS)	Number of database links	--	ulong	No	Not supported	COUNT(V$DBLINK)
Links In Tran (LINKS_IN_TRAN)	This field is not supported. Number of current database links in the transaction.	--	ulong	No	Not supported	SUM(V $DBLINK.IN_TRANS ACTION)
Links Logged On (LINKS_LOGGED_ON)	This field is not supported. Number of database links currently logged in.	--	ulong	No	Not supported	SUM(V $DBLINK.LOGGED_O N)
Links Open Cursors (LINKS_OPEN_CURSOR S)	This field is not supported. Number of database links with open cursor.	--	ulong	No	Not supported	SUM(V $DBLINK.OPEN_CUR SORS)
Log Files % (PERCENT_LOG_FILES)	Percentage ratio of REDO log files to the LOG_FILES parameter value in the init.ora file. Correct values cannot be collected in this field (always 0).	--	double	No	All	--
Log Mode (LOG_MODE)	Archive log mode. Valid values are NOARCHIVE, LOG, and ARCHIVELOG.[#10]	--	string(12)	No	All	V $DATABASE.LOG_MO DE
Mbytes (BYTES)	Size of a database file in megabytes[#8]	--	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: SUM(DBA_DATA_ FILES.BYTES) / (1024 * 1024) • For Oracle that has locally managed temporary tablespaces: (SUM(DBA_DATA _FILES.BYTES) + SUM(DBA_TEMP_ FILES.BYTES)) / (1024 * 1024)
Next Alloc Fails (NEXT_ALLOC_FAILS)	Correct values cannot be collected in this field.	--	ulong	No	All	COUNT(DBA_SEGMEN TS) where NEXT_EXTENT > MAX(FETS

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Next Alloc Fails (NEXT_ALLOC_FAILS)	Number of segments that exceed the maximum fragments permitted for NEXT_EXTENT. For locally managed temporary tablespaces, always 0.	--	ulong	No	All	$.LENGTH) * DB_BLOCK_SIZE
Overextended (OVEREXTENDED)	Correct values cannot be collected in this field. Number of segments with more than five extents.	--	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where EXTENTS > 5 • For Oracle that has locally managed temporary tables spaces: COUNT(DBA_SEGMENTS) where EXTENTS > 5 + COUNT(V$SORT_SEGMENT) where TOTAL_EXTENTS > 5
Physical Blocks Read (PHYSICAL_BLOCKS_READ)	Number of physical block read operations#8	--	double	No	All	SUM(V$FILESTAT.PHYBLKRD)
Physical Blocks Written (PHYSICAL_BLOCKS_WRITTEN)	Number of physical block write operations#8	--	double	No	All	SUM(V$FILESTAT.PHYBLKWRT)
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed#8	--	double	No	All	SUM(V$FILESTAT.PHYRDS)
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations that were completed#8	--	double	No	All	SUM(V$FILESTAT.PHYWRTS)
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDDB)	--	string(4)	No	All	Remote Monitor Collector
Redo Files (REDO_FILES)	Number of REDO log files#10	--	ulong	No	All	COUNT(V$LOGFILE)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Rollback Segments (ROLLBACK_SEGMENTS)	Number of rollback segments[#8]	--	ulong	No	All	COUNT(V$ROLLNAME)
Rollback Segments Hit % (ROLLBACK_SEGMENTS_HIT_PERCENTAGE)	Rate at which the rollback segment header was obtained without waiting[#8]	--	double	No	All	((SUM(V$ROLLSTAT.GETS) - SUM(V$ROLLSTAT.WAITS)) / SUM(V$ROLLSTAT.GETS)) * 100
Rollback Segments Trans (ROLLBACK_SEGMENTS_TRANS)	Number of currently active transactions[#8]	--	ulong	No	All	SUM(V$ROLLSTAT.XACTS)
Segments (SEGMENTS)	Correct values cannot be collected in this field. Number of segments.	--	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: COUNT(DBA_SEGMENTS) + COUNT(DBA_TEMP_FILES GROUP BY TABLESPACE_NAME) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: COUNT(DBA_SEGMENTS) + COUNT(V$SORT_SEGMENT)
Sort Segments (SORT_SEGMENTS)	Correct values cannot be collected in this field. Number of sort segments.	--	ulong	No	All	COUNT(V$SORT_SEGMENT)
Sorting Users (SORTING_USERS)	Number of active users for the current sort segment[#8]	--	long	No	All	SUM(V$SORT_SEGMENT.CURRENT_USERS)
Start Time	Collection start time for the performance	--	time_t	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(START_TIME)	data stored in the record	--	time_t	No	All	Remote Monitor Collector
Tablespaces (TABLESPACES)	Number of tablespaces#8	--	double	No	All	COUNT(DBA_TABLESPACES)
Used Mbytes (USED_BYTES)	Size of used area in megabytes. If the monitoring target is locally managed temporary tablespaces, performance data are not collected. #8	--	double	No	All	• For Oracle that does not have any UNDO tablespaces or has UNDO tablespaces when the value of undospace_option is N: SUM(sm$ts_used.bytes)/(1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(sm$ts_used.bytes) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations#8	--	double	No	All	(SUM(V$FILESTAT.PHYWRTS) / (SUM(V$FILESTAT.PHYRDS) + SUM(V$FILESTAT.PHYWRTS))) * 100

#8

Displays performance data for the PDBs that are being monitored.

#10

Displays common performance data for database instances.

Database Interval (PI_PIDB)

Function

The Database Interval (PI_PIDB) record stores performance data, taken at specific intervals, about a database.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some fields in this record include information of performance data for the PDBs that are being monitored and common performance data for database instances. For details, see the descriptions of each field.

Default and changeable values

Item	Default value	Changeable
Collection Interval	3600	Y
Collection Offset	10	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of a database

Record size

- Fixed part: 1,663 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Archive Change # (ARCHIVE_CHANGE_NUM)	Last archived system change number (SCN)#1#10	COPY	double	No	All	V$DATABASE.ARCHIVE_CHANGE#
Blocks (BLOCKS)	Size of the database in Oracle blocks#2#8	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: SUM(DBA_DATA_FILES.BLOCKS) • For Oracle that has locally managed temporary tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Blocks (BLOCKS)	Size of the database in Oracle blocks#2#8	AVG	double	No	All	SUM(DBA_DATA_FILES.BLOCKS) + SUM(DBA_TEMP_FILES.BLOCKS)
Checkpoint Change # (CHECKPOINT_CHANGE_NUM)	System change number (SCN) at the last checkpoint#1#10	COPY	double	No	All	V$DATABASE.CHECKPOINT_CHANGE#
Created (CREATED)	Creation date #1#10	COPY	string(20)	No	All	V$DATABASE.CREATED
Datafiles (DATAFILES)	Number of data files #2#8	AVG	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(V$DATAFILE) • For Oracle that has locally managed temporary tablespaces: COUNT(V$DATAFILE) + COUNT(DBA_TEMP_FILES)
DB Files % (PERCENT_DB_FILES)	Percentage ratio of the data files to the DB_FILES parameter value in the init.ora file #2#8	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: (COUNT(V$DATAFILE) / init.ora DB_FILES) * 100 • For Oracle that has locally managed temporary tablespaces: ((COUNT(V$DATAFILE) + COUNT(DBA_TEMP_FILES)) / init.ora DB_FILES) * 100
DB Name (NAME)	Database name #1#10	COPY	string(9)	No	All	V$DATABASE.NAME
Extents (EXTENTS)	Correct values cannot be collected in this field. Number of extents. #2	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: SUM(DBA_SEGMENTS.EXTENTS)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Extents (EXTENTS)	Correct values cannot be collected in this field. Number of extents. #2	AVG	double	No	All	• For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: SUM(DBA_SEGMENTS.EXTENTS) + SUM(DBA_TEMP_FILES.BYTES / V$TEMP_EXTENT_MAP.BYTES) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: SUM(DBA_SEGMENTS.EXTENTS) + SUM(V$SORT_SEGMENT.TOTAL_EXTENTS)
Free % (PERCENT_FREE)	Percentage ratio of free space #2#8	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces or has UNDO tablespaces when the value of undospace_option is N: (SUM(DBA_FREE_SPACE.BYTES) / DBA_DATA_FILES.BYTES) * 100 • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: (((SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free % (PERCENT_FREE)	Percentage ratio of free space #2#8	AVG	double	No	All	MAP.BYTES))) / (DBA_DATA_FILES.BYTES + DBA_TEMP_FILES.BYTES)) * 100 • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option isN: ((SUM(DBA_FREE_SPACE.BYTES) + SUM(V$TEMP_SPACE_HEADER.BYTES_FREE)) / (DBA_DATA_FILES.BYTES +DBA_TEMP_FILES.BYTES)) * 100 • For the UNDO tablespaces when the value of undospace_option is Y: ((SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / DBA_DATA_FILES.BYTES) * 100
Free Change (FREE_CHANGE)	Change to the free space in bytes#2#8	AVG	double	No	All	• For Oracle that does not have any UNDO tablespaces or has UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Change (FREE_CHANGE)	Change to the free space in bytes[#2#8]	AVG	double	No	All	EXTENTS.BYTES) WHERE STATUS='EXPIRED')
Free Extents (FREE_EXTENTS)	Number of free extents [#2#8]	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_FREE_SPACE) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: COUNT(DBA_FREE_SPACE) + SUM(DBA_TEMP_FILES.BYTES / V$TEMP_EXTENT_MAP.BYTES) - V$SORT_SEGMENT.USED_EXTENTS • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: COUNT(DBA_FREE_SPACE) + COUNT(V$TEMP_SPACE_HEADER)
Free Mbytes (FREE_BYTES)	Size of free space in megabytes [#2#8]	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces or has UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) / (1024 * 1024) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Mbytes (FREE_BYTES)	Size of free space in megabytes #2#8	AVG	double	No	All	(SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_MAP.BYTES)) / (1024 * 1024) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: (SUM(DBA_FREE_SPACE.BYTES) + SUM(V$TEMP_SPACE_HEADER.BYTES_FREE)) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 x 1024)
High Max Extent (HIGH_MAX_EXTENTS)	Correct values cannot be collected in this field. Number of segments whose PCT_MAX_EXTENTS value exceeds 90%. #2	HILO	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where DBA_SEGMENTS.EXTENTS >0.9 * DBA_SEGMENTS.MAX_EXTENTS • For Oracle that has locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where DBA_SEGMENTS.EXTENTS > 0.9

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
High Max Extent (HIGH_MAX_EXTENTS)	Correct values cannot be collected in this field. Number of segments whose PCT_MAX_EXTENTS value exceeds 90%. #2	HILO	ulong	No	All	* DBA_SEGMENTS.MAX_EXTENTS + COUNT(V$SORT_SEGMENT) where V$SORT_SEGMENTS.TOTAL_EXTENTS > 0.9 * V$SORT_SEGMENT.MAX_SIZE
I/O Ops/sec (IO_RATE)	Number of I/O operations per second #2#8	AVG	double	No	All	(SUM(V$FILESTAT.PHYRDS) + SUM(V$FILESTAT.PHYWRTS)) / seconds in interval
Links (LINKS)	This field is not supported. Number of database links. #2	AVG	long	No	Not supported	COUNT(V$DBLINK)
Links In Tran (LINKS_IN_TRAN)	This field is not supported. Number of current database links in the transaction. #2	AVG	long	No	Not supported	SUM(V$DBLINK.IN_TRANSACTION)
Links Logged On (LINKS_LOGGED_ON)	This field is not supported. Number of database links currently logged on. #2	AVG	long	No	Not supported	SUM(V$DBLINK.LOGGED_ON)
Links Open Cursors (LINKS_OPEN_CURSORS)	This field is not supported. Number of database links with open cursor. #2	AVG	long	No	Not supported	SUM(V$DBLINK.OPEN_CURSORS)
Log Files % (PERCENT_LOG_FILES)	Percentage ratio of REDO log files to the LOG_FILES parameter value in the init.ora file #2 Correct values cannot be collected in this field (always 0).	AVG	double	No	All	--
Log Mode (LOG_MODE)	Archive log mode. Valid values are NOARCHIVE, LOG, and ARCHIVELOG. #1#10	COPY	string(12)	No	All	V$DATABASE.LOG_MODE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Mbytes (BYTES)	Size of a database file in megabytes #2#8	AVG	double	No	All	• For Oracle that does not have any locally managed temporary tablespaces: SUM(DBA_DATA_FILES.BYTES) / (1024 * 1024) • For Oracle that has locally managed temporary tablespaces: (SUM(DBA_DATA_FILES.BYTES) + SUM(DBA_TEMP_FILES.BYTES)) / (1024 * 1024)
Next Alloc Fails (NEXT_ALLOC_FAILS)	Correct values cannot be collected in this field. Number of segments that exceed the maximum fragments permitted for NEXT_EXTENT. For locally managed temporary tablespaces, always 0.#2	HILO	ulong	No	All	COUNT(DBA_SEGMENTS) where NEXT_EXTENT > MAX(FET$.LENGTH) * DB_BLOCK_SIZE
Overextended (OVEREXTENDED)	Correct values cannot be collected in this field. Number of segments with more than five extents. #2	HILO	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where EXTENTS > 5 • For Oracle that has locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) where EXTENTS > 5 + COUNT(V$SORT_SEGMENT) where TOTAL_EXTENTS > 5
Physical Blocks Read (PHYSICAL_BLOCKS_READ)	Number of physical block read operations #2#8	AVG	double	Yes	All	SUM(V$FILESTAT.PHYBLKRD)
Physical Blocks Written (PHYSICAL_BLOCKS_WRITTEN)	Number of physical block write operations #2#8	AVG	double	Yes	All	SUM(V$FILESTAT.PHYBLKWRT)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed #2#8	AVG	double	Yes	All	SUM(V$FILESTAT.PHYRDS)
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations that were completed #2#8	AVG	double	Yes	All	SUM(V$FILESTAT.PHYWRTS)
Reads/sec (READ_RATE)	Number of read operations per second #2#8	AVG	double	No	All	SUM(V$FILESTAT.PHYRDS) / seconds in interval
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record#1	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PIDB)#1	COPY	string(4)	No	All	Remote Monitor Collector
Redo Files (REDO_FILES)	Number of REDO log files #2#10	AVG	ulong	No	All	COUNT(V$LOGFILE)
Rollback Segments (ROLLBACK_SEGMENTS)	Number of rollback segments #2#8	AVG	ulong	No	All	COUNT(V$ROLLNAME)
Rollback Segments Hit % (ROLLBACK_SEGMENTS_HIT_PERCENTAGE)	Rate at which the rollback segment header was obtained without waiting #2#8	AVG	double	No	All	((SUM(V$ROLLSTAT.GETS) - SUM(V$ROLLSTAT.WAITS)) / SUM(V$ROLLSTAT.GETS)) * 100
Rollback Segments Trans (ROLLBACK_SEGMENTS_TRANS)	Number of currently active transactions #2#8	AVG	long	No	All	SUM(V$ROLLSTAT.XACTS)
Segments (SEGMENTS)	Correct values cannot be collected in this field. Number of segments. #2	AVG	ulong	No	All	• For Oracle that does not have any locally managed temporary tablespaces: COUNT(DBA_SEGMENTS) • For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is Y: COUNT(DBA_SEGMENTS) + COUNT(DBA_TEMP_FILES GROUP BY TABLESPACE_NAME)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Segments (SEGMENTS)	Correct values cannot be collected in this field. Number of segments. #2	AVG	ulong	No	All	• For Oracle that has locally managed temporary tablespaces when the value of localtemp_option is N: COUNT(DBA_SEGMENTS) + COUNT(V$SORT_SEGMENT)
Sort Segments (SORT_SEGMENTS)	Correct values cannot be collected in this field. Number of sort segments. #2	AVG	ulong	No	All	COUNT(V$SORT_SEGMENT)
Sorting Users (SORTING_USERS)	Number of active users for the current sort segment #2#8	AVG	long	No	All	SUM(V$SORT_SEGMENT.CURRENT_USERS)
Start Time (START_TIME)	Collection start time for the performance data stored in the record#1	COPY	time_t	No	All	Remote Monitor Collector
Tablespaces (TABLESPACES)	Number of tablespaces #2#8	AVG	double	No	All	COUNT(DBA_TABLESPACES)
Used Change (USED_CHANGE)	Change to the used space in bytes#2#8	AVG	double	No	All	• For Oracle that does not have any UNDO tablespaces or has UNDO tablespaces when the value of undospace_option is N: SUM(sm$ts_uses.bytes) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(sm$ts_uses.bytes) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED')
Used Mbytes (USED_BYTES)	Size of used area in megabytes. If the monitoring target is locally managed temporary tablespaces,	AVG	double	No	All	• For Oracle that does not have any UNDO tablespaces or has UNDO tablespaces when the value of

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Used Mbytes (USED_BYTES)	performance data are not collected. #2#8	AVG	double	No	All	undospace_option is N: SUM(sm $ts_used.bytes) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(sm $ts_used.bytes) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations #2#8	AVG	double	No	All	(SUM(V $FILESTAT.PHYWRTS) / (SUM(V $FILESTAT.PHYRDS) + SUM(V $FILESTAT.PHYWRTS))) * 100
Writes/sec (WRITES_RATE)	Number of write operations per second#2#8	AVG	double	No	All	SUM(V $FILESTAT.PHYWRTS) / seconds in interval

#8

Displays performance data for the PDBs that are being monitored.

#10

Displays common performance data for database instances.

Instance (PD_PDI)

Function

The Instance (PD_PDI) record stores performance data indicating the status (at a specific point in time) of an instance.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	50	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 1,385 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Host (HOST)	Name of the physical host connected to the running instance	--	string(64)	No	All	V $INSTANCE.HOST_NAME
ORACLE_HOME (ORACLE_HOME)	ORACLE_HOME environment variable	--	string(255)	No	All	--
ORACLE_SID (ORACLE_SID)	ORACLE_SID environment variable	--	string(30)	No	All	--
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDI)	--	string(4)	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Restricted Mode (RESTRICTED_MODE)	This field is not supported. The value of this field is 1 if the instance is in restricted mode and 0 if the instance is not in restricted mode.	--	short	No	Not supported	V$INSTANCE.LOGINS
Session Current (SESSION_CURRENT)	Current number of concurrent user sessions	--	ulong	No	All	V$LICENSE.SESSIONS_CURRENT
Session Highwater (SESSION_HIGHWATER)	Maximum number of concurrent user sessions since the instance started	--	ulong	No	All	V$LICENSE.SESSIONS_HIGHWATER
Sessions Max (SESSIONS_MAX)	Maximum number of concurrent user sessions permitted for the instance	--	ulong	No	All	V$LICENSE.SESSIONS_MAX
Sessions Warning (SESSIONS_WARNING)	Warning limit for the concurrent user sessions for the instance	--	ulong	No	All	V$LICENSE.SESSIONS_WARNING
SGA Database Buffers (SGA_DATABASE_BUFFERS)	Size of SGA database buffer in bytes	--	double	No	All	V$SGA.VALUE where V$SGA.NAME = 'Database Buffers'
SGA Fixed Size (SGA_FIXED_SIZE)	Size of SGA fixed memory in bytes	--	double	No	All	V$SGA.VALUE where V$SGA.NAME = 'Fixed Size'
SGA Redo Buffers (SGA_REDO_BUFFERS)	Size of SGA REDO buffer in bytes	--	double	No	All	V$SGA.VALUE where V$SGA.NAME = 'Redo Buffers'
SGA Variable Size (SGA_VARIABLE_SIZE)	Size of SGA variable memory in bytes	--	double	No	All	V$SGA.VALUE where V$SGA.NAME = 'Variable Size'
Shutdown Pending (SHUTDOWN_PENDING)	The value of this field is 1 if shutdown is on hold, and 0 if shutdown is not on hold.	--	short	No	All	V$INSTANCE.SHUTDOWN_PENDING
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Startup Time (STARTUP_TIME)	Start date and time	--	string(20)	No	All	V$INSTANCE.STARTUP_TIME

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Users Max (USERS_MAX)	Maximum number of users permitted for the database	--	ulong	No	All	V $LICENSE.USERS_MAX
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Version (VERSION)	Oracle Database version. 0 is set in lower than revision, if the monitoring target is Oracle Database 18c or later.	--	string(20)	No	All	PRODUCT_COMPONENT_VERSION

Instance Availability (PD_PDIA)

Function

An Instance Availability (PD_PDIA) record stores performance data indicating the availability of an instance at a specific point in time. This record is immediately disconnected when a connection to an Oracle Database is attempted and successful. As such, due to data collection for other records, if an Oracle Database is already connected, there may temporarily be two connections.

Default and changeable values

Item	Default value	Changeable
Collection Interval	60	Y
Collection Offset	0	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 952 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Availability (AVAILABILITY)	Availability status[#3, #4] Valid values are 0 (stopped) or 1 (running). If connection to an Oracle Database is impossible, 0 (stopped). If connection to an Oracle Database is possible, 1 (running).	--	short	No	All	Remote Monitor Collector
Collect Time (COLLECT_TIME)	Time required for processing to connect to and disconnect from an Oracle Database (in milliseconds)	--	long	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Error # (ERROR_NUM)	Error code when a connection to an Oracle Database is attempted and results in an error[#5] This is blank when the connection is successful.	--	string(10)	No	All	Remote Monitor Collector
Record Time (RECORD_TIME)	Collection end time of performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name. This is always PDIA.	--	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time of performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

#3

PFM - RM for Oracle connects to Oracle Database via listener. For this reason, availability field means the availability status of listener and Oracle Database.

#4

If the maximum number of concurrent user sessions that can be recognized by an Oracle instance has been reached before PD_PDIA record collection (due to failed attempts to connect to the Oracle Database), the Availability field of a PD_PDIA record may be displayed as 0 (stopped), but other records may be obtained normally.

Likewise, when an Oracle instance stops running during record collection, the Availability field of a PD_PDIA record may be displayed as 0 (stopped), but other records may be obtained normally.

Also, when an Oracle instance stopped during record collection starts again, the Availability field of a PD_PDIA record may be displayed as 1 (running), but other records may not be able to be obtained.

#5

The following table lists example output for the Error # field and the corresponding message code. The error codes in this table are output when Oracle is physically disconnected. For details about the messages that correspond to the Oracle message codes, see the Oracle documentation.

Table 5–10: Examples of Error # field output and corresponding message codes

Example of Error # field output (Oracle error code)	Corresponding Oracle message code
28	ORA-00028
1012	ORA-01012
3113	ORA-03113
3114	ORA-03114
12571	ORA-12571

Lock Waiters (PD_PDLW)

Function

The Lock Waiters (PD_PDLW) record stores performance data indicating the status (at a specific point in time) of all sessions waiting for lock and all sessions holding lock. PFM - RM for Oracle creates one record for each lock that a session is waiting for. This is a multi-instance record.

If you cannot view the performance data in this record, create Oracle's static data dictionary view DBA_WAITERS. To create the static dictionary view DBA_WAITERS, you need to execute the CATBLOCK.SQL script that is provided by Oracle.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	60	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the start to the end of a deadlock

Record size

- Fixed part: 935 bytes
- Variable part: 428 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Holding OS PID (HOLDING_PID)	OS's client process ID corresponding to the session holding the lock	--	string(30)	No	All	V$SESSION.PROCESS
Holding Session (HOLDING_SESSION)	Session ID holding the lock	--	ulong	No	All	DBA_WAITERS.HOLDING_SESSION
Holding User (HOLDING_USER)	User name for the session holding the lock	--	string(30)	No	All	V$SESSION.USERNAME

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Lock ID1 (LOCK_ID1)	Lock ID 1	--	string(40)	No	All	DBA_WAITERS.LOCK_ID1
Lock ID2 (LOCK_ID2)	Lock ID 2	--	string(40)	No	All	DBA_WAITERS.LOCK_ID2
Lock Type (TYPE)	Lock type	--	string(30)	No	All	DBA_WAITERS.TYPE
Mode Held (MODE_HELD)	Lock mode that was held during data collection	--	string(40)	No	All	DBA_WAITERS.MODE_HELD
Mode Requested (MODE_REQUESTED)	Lock mode that was requested during data collection	--	string(40)	No	All	DBA_WAITERS.MODE_REQUESTED
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDLW)	--	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Waiting OS PID (WAITING_PID)	OS's client process ID corresponding to the session waiting for the lock	--	string(30)	No	All	V$SESSION.PROCESS
Waiting Session (WAITING_SESSION)	Session ID waiting for the lock	--	ulong	No	All	DBA_WAITERS.WAITING_SESSION
Waiting User (WAITING_USER)	User name for the session waiting for the lock	--	string(30)	No	All	V$SESSION.USERNAME
XID (XID)	ID used internally to identify the record	--	string(100)	No	All	DBA_WAITERS.LOCK_ID1 + DBA_WAITERS.LOCK_ID2 + DBA_WAITERS.HOLDING_SESSION + DBA_WAITERS.WAITING_SESSION

Minimum Database Interval 2 (PI_PMDB)

Function

The Minimum Database Interval 2 (PI_PMDB) record stores performance data, taken at specific intervals, about a database.

Default and changeable values

Item	Default Value	Changeable
Collection Interval	3600	Y
Collection Offset	1810	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC Key Fields

None

Lifetime

From the creation to the deletion of a database

Record Size

- Fixed part: 945 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
DB Name (NAME)	Database name	COPY	string(9)	No	All	V$DATABASE.NAME
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PMDB)	COPY	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance data stored in the record	COPY	time_t	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

Minimum Data File Interval 2 (PI_PMDF)

Function

The Minimum Data File Interval 2 (PI_PMDF) record stores performance data, taken at specific intervals, about data files. PFM - RM for Oracle creates one record for each data file in a database. This is a multi-instance record.

Default and changeable values

Item	Default Value	Changeable
Collection Interval	300	Y
Collection Offset	50	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC Key Fields

- PI_PMDF_FILE_NUM
- PI_PMDF_NAME

Lifetime

From the creation to the deletion of a data file

Record Size

- Fixed part: 935 bytes
- Variable part: 655 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
File # (FILE_NUM)	File identification number	COPY	ushort	No	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$DATAFILE.FILE# For locally managed temporary tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
File # (FILE_NUM)	File identification number	COPY	ushort	No	All	V $TEMPFILE.FILE#
File Name (NAME)	File name	COPY	string(513)	No	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.NAME For locally managed temporary tablespaces: V $TEMPFILE.NAME
I/O Ops/sec (IO_RATE)	Number of I/O operations per second	AVG	double	No	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: (V $FILESTAT.PHYRDS + V $FILESTAT.PHYWRTS) / seconds in interval For locally managed temporary tablespaces: (V $TEMPSTAT.PHYRDS + V $TEMPSTAT.PHYWRTS) / seconds in interval
Mbytes (BYTES)	Percentage of disk space used by a file	COPY	double	No	All	For dictionary managed permanent tablespaces, dictionary

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Mbytes (BYTES)	system, in megabytes	COPY	double	No	All	managed temporary tablespaces, or locally managed permanent tablespaces: V $DATAFILE.BYTES / (1024 * 1024) For locally managed temporary tablespaces: V $TEMPFILE.BYTES / (1024 * 1024)
Physical Reads (PHYSICAL_READS)	Number of physical block read operations that were completed during the interval	AVG	double	Yes	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYRDS For locally managed temporary tablespaces: V $TEMPSTAT.PHYRDS
Physical Writes (PHYSICAL_WRITES)	Number of physical block write operations that were completed during the interval	AVG	double	Yes	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYWRTS For locally managed

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Physical Writes (PHYSICAL_WRITES)	Number of physical block write operations that were completed during the interval	AVG	double	Yes	All	temporary tablespaces: V $TEMPSTAT.PHYWRTS
Reads/sec (READ_RATE)	Number of read operations per second	AVG	double	No	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V $FILESTAT.PHYRDS / seconds in interval For locally managed temporary tablespaces: V $TEMPSTAT.PHYRDS / seconds in interval
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PMDF)	COPY	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance data stored in the record	COPY	time_t	No	All	Remote Monitor Collector
Tablespace Name (TABLESPACE_NAME)	Tablespace name associated with the file	COPY	string(30)	No	All	For dictionary managed permanent tablespaces, dictionary managed

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Tablespace Name (TABLESPACE_NAME)	Tablespace name associated with the file	COPY	string(30)	No	All	temporary tablespaces, or locally managed permanent tablespaces: DBA_DATA_FILES.TABLESPACE_NAME For locally managed temporary tablespaces: DBA_TEMP_FILES.TABLESPACE_NAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Writes/sec (WRITES_RATE)	Number of write operations per second	AVG	double	No	All	For dictionary managed permanent tablespaces, dictionary managed temporary tablespaces, or locally managed permanent tablespaces: V$FILESTAT.PHYWRTS / seconds in interval For locally managed temporary tablespaces: V$TEMPSTAT.PHYWRTS / seconds in interval

Minimum Tablespace Interval 2 (PI_PMTS)

Function

The Minimum Tablespace Interval 2 (PI_PMTS) record stores performance data, taken at specific intervals, about tablespaces in a database. PFM - RM for Oracle creates one record for each tablespace in a database. This is a multi-instance record.

Default and changeable values

Item	Default Value	Changeable
Collection Interval	3600	Y
Collection Offset	1510	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PI_PMTS_TABLESPACE_NAME

Lifetime

From the creation to the deletion of a tablespace

Record Size

- Fixed part: 935 bytes
- Variable part: 163 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
I/O Ops/sec (IO_RATE)	Number of I/O operations per second	AVG	double	No	All	(SUM(V$FILESTAT.PHYRDS) + SUM(V$FILESTAT.PHYWRTS)) / seconds in interval
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed	AVG	double	Yes	All	SUM(V$FILESTAT.PHYRDS) • For locally managed temporary tablespaces: SUM(V$TEMPSTAT.PHYRDS)
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations that were completed	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(V$FILESTAT.PHYWRTS) • For locally managed temporary tablespaces: SUM(V$TEMPSTAT.PHYWRTS)
Reads/sec (READ_RATE)	Number of read operations per second	AVG	double	No	All	SUM(V$FILESTAT.PHYRDS)/ seconds in interval
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PMTS)[#1]	COPY	string(4)	No	All	Remote Monitor Collector
Rollback Segments (ROLLBACK_SEGMENTS)	Number of rollback segments. Performance data about a locally managed tablespace is not collected.[#2]	AVG	ulong	No	All	COUNT(DBA_ROLLBACK_SEGS)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported Version	Data Source
Sort Segments (SORT_SEGMENTS)	Number of sort segments. Performance data about a locally managed permanent tablespace is not collected.#2	AVG	ulong	No	All	COUNT(V$SORT_SEGMENT)
Start Time (START_TIME)	Collection start time for the performance data stored in the record	COPY	time_t	No	All	Remote Monitor Collector
Tablespace Name (TABLESPACE_NAME)	Tablespace name	COPY	string(30)	No	All	DBA_TABLESPACES.TABLESPACE_NAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Writes/sec (WRITES_RATE)	Number of write operations per second	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(V$FILESTAT.PHYWRTS) / seconds in interval • For locally managed temporary tablespaces: SUM(V$TEMPSTAT.PHYWRTS) / seconds in interval

Open Cursor (PD_PDOC)

Function

The Open Cursor (PD_PDOC) record stores performance data indicating the status (at a specific point in time) of cursors. PFM - RM for Oracle creates one record for each open cursor in the system. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	75	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

- PD_PDOC_SID
- PD_PDOC_ADDRHASH

Lifetime

From the opening to the closing of the cursor

Record size

- Fixed part: 935 bytes
- Variable part: 184 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Addrhash (ADDRHASH)	Character string that identifies the SQL statement being executed	--	string(38)	No	All	V $OPEN_CURSOR.ADDRESS + V $OPEN_CURSOR.HASH_VALUE
Program (PROGRAM)	Name of the program being executed	--	string(48)	No	All	V $SESSION.PROGRAM where V $OPEN_CURSOR.SID = V$SESSION.SID
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Record Type (INPUT_RECORD_TYPE)	Record name (always PDOC)	--	string(4)	No	All	Remote Monitor Collector
SID (SID)	Session ID	--	ulong	No	All	V$SESSION.SID where V$OPEN_CURSOR.SID = V$SESSION.SID
SQL Text (SQL_TEXT)	First 60 characters of the SQL statement that is analyzed by the open cursor	--	string(60)	No	All	V$OPEN_CURSOR.SQL_TEXT
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
User (USERNAME)	Oracle user name	--	string(30)	No	All	V$SESSION.USERNAME where V$OPEN_CURSOR.SID = V$SESSION.SID
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

Parameter Values (PD_PDP)

Function

The Parameter Values (PD_PDP) record stores performance data indicating the status (at a specific point in time) of current parameter values. PFM - RM for Oracle creates one record for each parameter. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	85	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PD_PDP_NAME

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 935 bytes
- Variable part: 588 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Is Default (IS_DEFAULT)	Whether or not the value is the default. Valid values are TRUE and FALSE.	--	string(9)	No	All	V$PARAMETER.ISDEFAULT
Parameter Name (NAME)	Parameter name	--	string(64)	No	All	V$PARAMETER.NAME
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDP)	--	string(4)	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Value (VALUE)	Parameter value	--	string(512)	No	All	V $PARAMETER.VALUE

Session Detail (PD_PDS)

Function

The Session Detail (PD_PDS) record stores the performance data indicating the status (at a specific point in time) of sessions. PFM - RM for Oracle creates one record for each session in an instance. This is a multi-instance record.

If you cannot view the performance data in this record, create Oracle's static data dictionary view DBA_WAITERS. To create the static dictionary view DBA_WAITERS, you need to execute the CATBLOCK.SQL script that is provided by Oracle.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, this record displays information about sessions of the PDBs that are being monitored, and about common sessions of database instances.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	100	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

- PD_PDS_SID
- PD_PDS_SERIAL_NUM

Lifetime

From the start to the end of a session

Record size

- Fixed part: 935 bytes
- Variable part: 727 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Action (ACTION)	Name of the action that is specified by calling the DBMS_APPLICATION_INFO.SET_ACTION	--	string(32)	No	All	V$SESSION.ACTION

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Action (ACTION)	procedure during data collection	--	string(32)	No	All	V$SESSION.ACTION
Addrhash (ADDRHASH)	Character string that identifies the SQL statement being executed	--	string(38)	No	All	V $SESSION.SQL_ADDRESS + V $SESSION.SQL_HASH_VALUE
Auditing SID (AUDSID)	Auditing session ID. The value of this field is -1 when Oracle Database 10g is being monitored or when the value of the User field is SYS.	--	ulong	No	All	V$SESSION.AUDSID
Avg Wait (AVERAGE_WAIT)	Average time of all events that the session is waiting for. In centiseconds (1/100 of a second). To collect the value of this field, the TIMED_STATISTICS parameter must be set to TRUE in the init.ora file.	--	ulong	No	All	AVG(V $SESSION_EVENT.AVERAGE_WAIT)
Avg Wait String (AVERAGE_WAIT_STRING)	Average time (character string) of all events that the session is waiting for. In seconds. To collect the value of this field, the TIMED_STATISTICS parameter must be set to TRUE in the init.ora file.	--	string(30)	No	All	AVG(V $SESSION_EVENT.AVERAGE_WAIT) / 100
Blocking Locks (BLOCKING_LOCKS)	Number of locks blocking another lock	--	double	No	All	COUNT(V$LOCK) where V $LOCK.BLOCK > 0
Client Info (CLIENT_INFO)	Information specified by calling the DBMS_APPLICATION_INFO.SE	--	string(64)	No	All	V $SESSION.CLIENT_INFO

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Client Info (CLIENT_INFO)	T_CLIENT_INFO procedure	--	string(64)	No	All	V$SESSION.CLIENT_INFO
Client PID (PROCESS)	Client ID of the OS	--	string(12)	No	All	V$SESSION.PROCESS
Command (COMMAND)	Command being executed or command number	--	string(32)	No	All	V$SESSION.COMMAND
Container ID (CONTAINER_ID)	The ID of the container to which this session belongs. This field is valid if the monitoring target is Oracle Database 12c R2 or later in a CDB configuration. Otherwise, the value is 0.	--	word	No	Oracle 12c R2 or later	V$SESSION.CON_ID
Fixed Table Sequence (FIXED_TABLE_SEQUENCE)	Value to be increased each time the session completes a call to the database	--	double	No	All	V$SESSION.FIXED_TABLE_SEQUENCE
Locks Held (LOCKS_HELD)	Number of locks held by the session during data collection	--	double	No	All	COUNT(V$LOCKS) where V$LOCK.LMODE is NOT NULL
Locks Requested (LOCKS_REQUESTED)	Number of requested locks that the session was not holding	--	double	No	All	COUNT(V$LOCKS) where V$LOCK.LMODE is NULL
Lockwait (LOCKWAIT)	Address of the lock the session is waiting for. If there is no such lock, the value is null.	--	string(16)	No	All	V$SESSION.LOCKWAIT
Logon Seconds (LOGON_SECONDS)	Number of seconds since login	--	ulong	No	All	V$SESSION.LOGON_TIME
Logon Time (LOGON_TIME)	Session connection time	--	string(20)	No	All	V$SESSION.LOGON_TIME
Machine (MACHINE)	OS machine name	--	string(64)	No	All	V$SESSION.MACHINE
Module (MODULE)	Name of the module being executed that is	--	string(48)	No	All	V$SESSION.MODULE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Module (MODULE)	specified by calling the DBMS_APPLICATION_INFO.SET_MODULE during data collection	--	string(48)	No	All	V$SESSION.MODULE
OS User (OSUSER)	Client user name of the OS	--	string(30)	No	All	V$SESSION.OSUSER
Open Cursors (OPEN_CURSORS)	Number of open cursors#11	--	ulong	No	All	COUNT(V$OPEN_CURSOR)
Oracle PID (PID)	Oracle process ID	--	ulong	No	All	V$PROCESS.PID where V$SESSION.PADDR = V$PROCESS.ADDR
Oracle Server (SERVER)	Oracle server type. Valid values are DEDICATED, NONE, PSEUDO, and SHARED.	--	string(9)	No	All	V$SESSION.SERVER
Program (PROGRAM)	Program name of OS	--	string(64)	No	All	V$SESSION.PROGRAM
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDS)	--	string(4)	No	All	Remote Monitor Collector
SID (SID)	Session ID	--	ulong	No	All	V$SESSION.SID
Schema # (SCHEMA_NUM)	Schema user ID	--	long	No	All	V$SESSION.SCHEMA#
Schema Name (SCHEMANAME)	Schema user name	--	string(30)	No	All	V$SESSION.SCHEMANAME
Serial # (SERIAL_NUM)	Session serial number that identifies the session object. The session serial number guarantees that a session-level command is applied to the correct session object even when	--	ulong	No	All	V$SESSION.SERIAL#

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Serial # (SERIAL_NUM)	one session ends and another session with the same session ID starts.	--	ulong	No	All	V$SESSION.SERIAL#
Session Events (SESSION_EVENTS)	Number of events placed in wait status by the session	--	short	No	All	COUNT(V$SESSION_EVENT)
Session Waits (SESSION_WAITS)	Number of waits caused by the session	--	ulong	No	All	COUNT(V$SESSION_WAIT)
Sessions Blocked (SESSIONS_BLOCKED)	Number of sessions blocked by the session#11	--	ulong	No	All	COUNT(DBA_WAITERS)
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Status (STATUS)	Session status. Valid values are ACTIVE, INACTIVE, KILLED, CACHED, and SNIPED.	--	string(8)	No	All	V$SESSION.STATUS
Table Accesses (TABLE_ACCESSES)	Number of table accesses#11	--	double	No	All	COUNT(V$ACCESS)
Terminal (TERMINAL)	Terminal name of the OS	--	string(16)	No	All	V$SESSION.TERMINAL
Time Waited (TIME_WAITED)	Total length of time the session waited for all events. In centiseconds (1/100 of a second). To collect the value of this field, the TIMED_STATISTICS parameter must be set to TRUE in the init.ora file.	--	ulong	No	All	SUM(V$SESSION_EVENT.TIME_WAITED)
Time Waited String (TIME_WAITED_STRING)	Total length of time (character string) the session waited for all	--	string(30)	No	All	SUM(V$SESSION_EVENT.TIME_WAITED) / 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Time Waited String (TIME_WAITED_STRING)	events. In seconds. To collect the value of this field, the TIMED_STATISTICS parameter must be set to TRUE in the init.ora file.	--	string(30)	No	All	SUM(V$SESSION_EVENT.TIME_WAITED) / 100
Total Timeouts (TOTAL_TIMEOUTS)	Total number of timeouts for the session events	--	ulong	No	All	SUM(V$SESSION_EVENT.TOTAL_TIMEOUTS)
Total Waits (TOTAL_WAITS)	Number of waits for all events of the session	--	double	No	All	SUM(V$SESSION_EVENT.TOTAL_WAITS)
Transaction Address (TRANSACTION_ADDRESS)	Address of the transaction state object	--	string(16)	No	All	V$SESSION.TADDR
Transactions (TRANSACTIONS)	Number of active transactions#11	--	ulong	No	All	COUNT(V$TRANSACTION)
Type (TYPE)	Session type	--	string(10)	No	All	V$SESSION.TYPE
User (USERNAME)	Oracle user name This field always includes a record for which NULL is set as information for the SYS user. Since null cannot be specified conditionally for connections from users other than special user A, use the User # field to specify the following conditional expressions: User<> "A" AND User #<>"0"	--	string(30)	No	All	V$SESSION.USERNAME
User # (USER_NUM)	Oracle user ID	--	long	No	All	V$SESSION.USER#
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

#11

The value is 0 for a common session of database instances.

Session I/O Interval (PI_PIIO)

Function

The Session I/O Interval (PI_PIIO) record stores performance data, taken at specific intervals, about input/output of all active sessions. PFM - RM for Oracle creates one record for each active session. This is a multi-instance record.

Note that this record is valid if PFM - RM for Oracle monitors information about a session whose connection continues for a long time in the Oracle database being monitored. A session of a connection pool is an example of such a session. However, valid data cannot be retrieved when connection and disconnection take place repeatedly because the ODBC key field is PI_PIIO_SID. In this case, when the difference from the previous value is retrieved for a delta, a possibility of retrieving the difference from a different session exists.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, this record includes I/O information about active sessions of the PDBs that are being monitored, and about common active sessions of database instances.

Default and changeable values

Item	Default value	Changeable
Collection Interval	300	Y
Collection Offset	25	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PI_PIIO_SID

Lifetime

From the start to the end of a session

Record size

- Fixed part: 935 bytes
- Variable part: 186 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Block Changes (BLOCK_CHANGES)	Number of times changes were made to session blocks[#2]	AVG	double	Yes	All	V$SESS_IO.BLOCK_CHANGES
Block Gets (BLOCK_GETS)	Number of times session blocks were acquired[#2]	AVG	double	Yes	All	V$SESS_IO.BLOCK_GETS

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Cache Hit % (CACHE_HIT_PERCENTAGE)	Buffer cache usage[#2]	AVG	double	No	All	100 * (BLOCK_GETS + CONSISTENT_GETS - PHYSICAL_READS) / (BLOCK_GETS + CONSISTENT_GETS)
Consistent Changes (CONSISTENT_CHANGES)	Number of times a consistent change was made in the session[#2]	AVG	double	Yes	All	V$SESS_IO.CONSISTENT_CHANGES
Consistent Gets (CONSISTENT_GETS)	Number of times a consistent acquisition was made in the session[#2]	AVG	double	Yes	All	V$SESS_IO.CONSISTENT_GETS
OS PID (PID)	Client process ID of the OS[#1]	COPY	string(30)	No	All	V$SESSION.PROCESS
Physical Reads (PHYSICAL_READS)	Number of physical read operations in the session[#2]	AVG	double	Yes	All	V$SESS_IO.PHYSICAL_READS
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PIIO)[#1]	COPY	string(4)	No	All	Remote Monitor Collector
SID (SID)	Session ID[#1]	COPY	ulong	No	All	V$SESS_IO.SID
Start Time (START_TIME)	Collection start time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
User (USERNAME)	User name of the session[#1]	COPY	string(30)	No	All	V$SESSION.USERNAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

Session Statistics Summary (PD_PDS2)

Function

The Session Statistics Summary (PD_PDS2) record stores performance data indicating the status (at a specific point in time) of each session and performance indicator of an instance. PFM - RM for Oracle create one record for each session in an instance. This is a multi-instance record.

If you cannot view the performance data in this record, create Oracle's static data dictionary view DBA_WAITERS. To create the static dictionary view DBA_WAITERS, you need to execute the CATBLOCK.SQL script that is provided by Oracle.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, this record includes information about sessions and performance indicators of the PDBs that are being monitored, and about common sessions and performance indicators of database instances.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	105	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PD_PDS2_SID

Lifetime

From the start to the end of a session

Record size

- Fixed part: 935 bytes
- Variable part: 412 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Block Changes/Tran (BLOCK_CHANGES_PER_TRANSACTION)	Rate at which each transaction executed DML operation	--	double	No	All	db block changes / user commits
Block Visits/Tran	Number of work database read operations	--	double	No	All	(db block gets + consistent

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(BLOCK_VISITS_PER_TRANSACTION)	executed per transaction	--	double	No	All	gets) / user commits
Blocking Locks (BLOCKING_LOCKS)	Number of locks owned by the session that are blocking another lock Correct values cannot be collected in this field, and 0 is always displayed.	--	double	No	All	Remote Monitor Collector
Cache Hit % (CACHE_HIT_PERCENTAGE)	Buffer cache usage	--	double	No	All	(1 - (physical reads cache / (consistent gets from cache + db block gets from cache))) * 100
Calls/Tran (CALLS_PER_TRANSACTION)	Rate at which client requests were executed per transaction	--	double	No	All	user calls / user commits
Changed Block % (CHANGED_BLOCK_PERCENTAGE)	Percentage indicating the balance between queries and DML in the database application. This value changes according to indexes and application utilization status.	--	double	No	All	(db block changes / (block gets + consistent gets)) * 100
Consistent Change % (CONSISTENT_CHANGE_PERCENTAGE)	Percentage indicating the extents for which the application needed to check the consistency of read operations	--	double	No	All	(consistent changes / consistent gets) * 100
Continued Row % (CONTINUED_ROW_PERCENTAGE)	Percentage ratio of rows obtained that were longer than one block or had been moved	--	double	No	All	(table fetch continued row / (table fetch by rowid + table scan rows gotten)) * 100
Deadlocks (LOCK_DEADLOCKS)	Number of process deadlocks caused by enqueuing (locking) of DML processing	--	double	No	All	V$SESSTAT.VALUE
Disk Sorts	Number of disk sort operations	--	double	No	All	V$SESSTAT.VALUE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(SORTS_DISK)	Number of disk sort operations	--	double	No	All	V$SESSTAT.VALUE
Lock Conversions (LOCK_CONVERSIONS)	Number of enqueues (locks) whose mode was changed (such as from share to lock)	--	double	No	All	V$SESSTAT.VALUE
Lock Releases (LOCK_RELEASES)	Number of times enqueuing (locking) was released. This statistical information is the same as the number of lock requests.	--	double	No	All	SUM(V$SESSTAT.VALUE)
Lock Requests (LOCK_REQUESTS)	Number of times enqueuing (locking) was requested	--	double	No	All	V$SESSTAT.VALUE
Lock Timeouts (LOCK_TIMEOUTS)	Number of times enqueuing (locking) request was not permitted within the specified wait time	--	double	No	All	V$SESSTAT.VALUE
Lock Waits (LOCK_WAITS)	Number of times the lock request was placed in wait status. The number of lock requests that were not placed in wait status is obtained by subtracting the number of enqueued waits from the number of lock requests.	--	double	No	All	V$SESSTAT.VALUE
Logical Reads (LOGICAL_READS)	Sum of the number of logical read operations in read consistency mode and the number of requests to the current copy of block	--	double	No	All	db block gets + consistent gets
Memory Sorts (SORTS_MEMORY)	Number of sort operations in memory	--	double	No	All	V$SESSTAT.VALUE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Non-Index Lookups % (NON_INDEX_LOOKUPS)	Percentage ratio of full table scans that do not involve caching	--	double	No	All	(table scans (long tables) / (table scans (short tables) + table scans (long tables))) * 100
PGA Memory (PGA_MEMORY)	Size of PGA memory in use during data collection	--	double	No	All	V$SESSTAT.VALUE
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations on the disk by DBWR	--	double	No	All	V$SESSTAT.VALUE
Physical Reads (PHYSICAL_READS)	Number of times a database block was actually read from disk	--	double	No	All	physical reads - physical reads direct - physical reads direct (lob)
Program (PROGRAM)	Program name of OS	--	string(48)	No	All	V $SESSION.PROGRAM
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDS2)	--	string(4)	No	All	Remote Monitor Collector
Recursive Calls (RECURSIVE_CALLS)	Number of user calls processed	--	double	No	All	V$SESSTAT.VALUE
Recursive to User Call % (RECURSIVE_TO_USER_CALL_PERCENTAGE)	Correct values cannot be collected in this field. Percentage indicating overhead.	--	double	No	All	(recursive calls / user calls) * 100
Redo Log Space Requests (REDO_LOG_SPACE_REQUESTS)	Number of times Oracle must wait until disk space is allocated for the REDO log entry, because the active log file is full	--	double	No	All	V$SESSTAT.VALUE
Redo Log Space Wait %	Percentage of waiting time until disk space is	--	double	No	All	(redo log space requests / redo entries) * 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(REDO_LOG_SPACE_WAIT_PERCENTAGE)	allocated for the REDO log entry	--	double	No	All	(redo log space requests / redo entries) * 100
Row Source % (ROW_SOURCE_PERCENTAGE)	Percentage ratio of all rows obtained by full table scan	--	double	No	All	(table scan rows gotten / (table fetch by rowid + table scan rows gotten)) * 100
SID (SID)	Session ID	--	ulong	No	All	V$SESSION.SID
SQL Net Bytes Rcvd (SQL_NET_BYTES_RECEIVED)	Number of bytes received from clients via SQL*Net	--	double	No	All	V$SESSTAT.VALUE
SQL Net Bytes Sent (SQL_NET_BYTES_SENT)	Number of bytes sent to clients via SQL*Net	--	double	No	All	V$SESSTAT.VALUE
Session Cursor Cache Count (SESSION_CURSOR_CACHE_COUNT)	Total number of references to the cursor	--	double	No	All	V$SESSTAT.VALUE
Session Cursor Cache Hit % (SESSION_CURSOR_CACHE_HIT_PERCENTAGE)	Number of times an access to the session cursor was executed but the session cursor was not found in the cache	--	double	No	All	(session cursor cache hits / session cursor cache count) * 100
Session Cursor Cache Hits (SESSION_CURSOR_CACHE_HITS)	Recorded count of session cursor cache hits	--	double	No	All	V$SESSTAT.VALUE
Sort Overflow % (SORT_OVERFLOW_PERCENTAGE)	Percentage ratio of sort operations using temporary segments	--	double	No	All	(sorts (disk) / (sorts (memory) + sorts (disk))) * 100
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Statement CPU (STATEMENT_CPU)	Total CPU time used by active statements during data collection. In centiseconds (1/100 of a second). To collect the value of this field, the	--	double	No	All	V$SESSTAT.VALUE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Statement CPU (STATEMENT_CPU)	TIMED_STATISTICS parameter must be set to TRUE in the init.ora file.	--	double	No	All	V$SESSTAT.VALUE
UGA Memory (UGA_MEMORY)	Number of session memory segments used	--	double	No	All	V$SESSTAT.VALUE
User (USERNAME)	Oracle user name	--	string(30)	No	All	V $SESSION.USERNAM E
User Calls (USER_CALLS)	Number of user calls processed by active sessions	--	double	No	All	V$SESSTAT.VALUE
User Calls / Parse (USER_CALLS_PER_PARSE)	Percentage indicating how well the application is managing the context area	--	double	No	All	user calls / parse count (total)
User Commits (USER_COMMITS)	Number of transactions	--	double	No	All	V$SESSTAT.VALUE
User Rollback % (USER_ROLLBACK_PERCENTAGE)	Percentage ratio of application transactions that failed (rolled back)	--	double	No	All	(user rollbacks / (user commits + user rollbacks)) * 100
User Rollbacks (USER_ROLLBACKS)	Number of rollbacks	--	double	No	All	V$SESSTAT.VALUE
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Waiting Locks (WAITING_LOCKS)	Number of locks owned by another session that this session is waiting for Correct values cannot be collected in this field, and 0 is always displayed.	--	double	No	All	--
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations to all physical I/O operations	--	double	No	All	(physical writes / (physical reads + physical writes)) * 100

SGA Components (PD_PDSG)

Function

The SGA Components (PD_PDSG) record stores performance data indicating the status (at a specific point in time) of the system global area (SGA). PFM - RM for Oracle creates one record for each system global area (SGA). This is a multi-instance record.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, this record collects different performance data depending on whether PDBs are being monitored or the root container (CDB$ROOT) is being monitored.

When monitoring PDBs

- Performance data for SGA allocated to the PDBs that are being monitored
- Performance data for common SGA of database instances

When monitoring the root container (CDB$ROOT)

- Use administrative accounts (sys or system)
  - Performance data for SGA allocated to all PDBs
  - Performance data for SGA allocated to the root container (CDB$ROOT)
  - Performance data for common SGA of database instances
- Use common user
  - Performance data for SGA allocated to the root container (CDB$ROOT)
  - Performance data for common SGA of database instances

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	115	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PD_PDSG_NAME

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 935 bytes
- Variable part: 66 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Bytes (BYTES)	Size of allocated memory (in bytes)	--	double	No	All	• V$SGASTAT.BYTES • V$SGA_DYNAMIC_COMPONENTS.CURRENT_SIZE
Component Name (NAME)	Name of the SGA component	--	string(26)	No	All	• V$SGASTAT.NAME • V$SGA_DYNAMIC_COMPONENTS.COMPONENT
Container ID (CONTAINER_ID)	The ID of the container to which SGA component belongs. This field is valid if the monitoring target is Oracle Database 12c R2 or later in a CDB configuration. Otherwise, the value is 0.	--	word	No	Oracle 12c R2 or later	V$SGASTAT.CON_ID
PDB Bytes (PDB_BYTES)	Retrieves total size of memory for each Container ID field. The value can be either of the following: • If the Container ID is not 0, total size of memory of all SGA components that are allocated to PDBs or the root container (CDB$ROOT) • If the Container ID is 0, total size of memory of common SGA components of database instances This field is valid if the monitoring target is Oracle Database 12c R2	--	double	No	Oracle 12c R2 or later	V$SGASTAT.BYTES

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
PDB Bytes (PDB_BYTES)	or later in a CDB configuration. Otherwise, the value is 0.	--	double	No	Oracle 12c R2 or later	V$SGASTAT.BYTES
Pool (POOL)	Pools in which there is component name memory. There are four pools: • shared pool • large pool • java pool • streams pool This field is blank when there is no applicable pool.	--	string(12)	No	10-00 or later	• V$SGASTAT.POOL
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDSG)	--	string(4)	No	All	Remote Monitor Collector
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Total Bytes (TOTAL_BYTES)	Total size (in bytes) of memory allocated to all SGA components If the monitoring target is Oracle 12c R2 or later in a CDB configuration, total size of memory allocated to the entire CDB.	--	double	No	All	V$SGASTAT.BYTES
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

SQL Text (PD_PDSQ)

Function

The SQL Text (PD_PDSQ) record stores performance data indicating the status (at a specific point in time) of the SQL text for a cursor in the shared cursor cache. PFM - RM for Oracle creates one record for each SQL text for a cursor in the shared cursor cache. This is a multi-instance record.

Since this record in available only in real-time, it is not displayed in the Properties window that is displayed by clicking the agent icon on the **Agents** page of PFM - Web Console, and then clicking the **Properties** method.

You use this record only when calling the SQL Text report provided by the monitoring template as a drilldown report. You cannot display a report using this record individually.

If you are displaying a report using this record with SQL and the user executing the SQL statement is not the user who created LSC_14_PLAN_TABLE in the sp_inst.sql script, the system issues a FAILED message to the Explain Plan (EXPLAIN_PLAN) field. To display the correct report, the user specified in the oracle_user property must execute the sp_inst.sql script.

This record displays a drilldown report of the SELECT, INSERT, UPDATE, and DELETE statements. It does not display a drilldown report of any other SQL statement or any PL/SQL package.

Notes

- Before creating an account, check whether you want to acquire the value of the Explain Plan (EXPLAIN_PLAN) field in the SQL Text (PD_PDSQ) record for operations on the objects that belong to the SYS schema. If you want to do so, use sys as the account to be used by PFM - RM for Oracle. If you use an account other than sys, you will no longer be able to acquire the value of that field. If the value of the EXPLAIN_PLAN field cannot be acquired, message Explain Plan Failed is stored in the field.
- If the account used by PFM - RM for Oracle has no privileges to access, or fails to reference, an object that belongs to a schema of the user who executed SQL, the following value cannot be acquired:

  The value of the Explain Plan (EXPLAIN_PLAN) field in the SQL Text (PD_PDSQ) record

  If the value of the EXPLAIN_PLAN field cannot be acquired, message Explain Plan Failed is stored in the field. If you want to acquire the value of the Explain Plan (EXPLAIN_PLAN) field, execute the SQL for manipulating the field in the *owner.table-name* format.

Default and changeable values

None

ODBC key fields

PD_PDSQ_ADDRHASH

Lifetime

None

Record size

- Fixed part: 935 bytes
- Variable part: 30,051 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Addrhash (ADDRHASH)	Address and hash value used to identify the cached cursor	--	string(38)	No	All	V$SQLTEXT.ADDRESS V$SQLTEXT.HASH_VALUE
Command Type (COMMAND_TYPE)	Type of the SQL statement	--	string(10)	No	All	V$SQLTEXT.COMMAND_TYPE
Explain Plan (EXPLAIN_PLAN)	Execution plan for SELECT, UPDATE, INSERT, and DELETE statements chosen by the Oracle optimizer	--	string(30000)	No	All	Remote Monitor Collector
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDSQ)	--	string(4)	No	All	Remote Monitor Collector
SQL Text (SQL_TEXT)	Portion of the SQL text	--	string(30000)	No	All	V$SQLTEXT.SQL_TEXT
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

System Stat Summary (PD)

Function

The System Stat Summary (PD) record stores performance data, taken at a specific point in time, indicating cumulative values from the start of the instance.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some fields in this record collect common performance data for database instances. The following table shows the relationship between the fields and performance data.

Fields	Performance data	
	When monitoring PDBs	When monitoring the root container (CDB$ROOT)
Dict Cache Get Misses % Lib Cache Miss % Redo Alloc Immediate % Redo Alloc Willing to Wait % Redo Copy Immediate % Redo Copy Willing to Wait %	Displays common performance data for database instances. Note The fields collect the same value when monitoring either the PDB or the root container (CDB$ROOT). To prevent alarm notification from multiple instances of PFM - RM for Oracle, select the instance to be monitored.	
Free List Wait Events Sys Undo Blk Wait Events Sys Undo Hdr Wait Events Undo Blk Wait Events Undo Hdr Wait Events	Displays performance data for the PDBs that are being monitored.	• Use administrative accounts (sys or system) Performance data for all PDBs and the root container (CDB$ROOT) are collected. • Use common user Performance data for the root container (CDB$ROOT) is collected.
Recursive To User Call % SQL Executing	As with non CDB, unable to collect valid performance data.	
Fields except for above	Displays performance data for the PDBs that are being monitored.	Displays common performance data for database instances.

Default and changeable values

Item	Default value	Changeable
Collection Interval	300	Y
Collection Offset	0	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 1,387 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Block Changes/Tran (BLOCK_CHANGES_PER_TRANSACTION)	Rate at which each transaction executed DML operation	--	double	No	All	db block changes / user commits
Block Visits/Tran (BLOCK_VISITS_PER_TRANSACTION)	Number of times a work database was loaded per transaction	--	double	No	All	(db block gets + consistent gets) / user commits
Buffer Busy Wait % (BUFFER_BUSY_WAIT_PERCENTAGE)	Percentage ratio of buffer busy waits	--	double	No	All	(V $SYSTEM_EVENT.TOTAL_WAITS where EVENT = 'buffer busy waits' / (consistent gets + db block gets)) * 100
Cache Hit % (CACHE_HIT_PERCENTAGE)	Buffer cache usage	--	double	No	All	(1 - (physical reads cache / (consistent gets from cache + db block gets from cache))) * 100
Calls/Tran (CALLS_PER_TRANSACTION)	Rate at which client requests were executed per transaction	--	double	No	All	user calls / user commits
Changed Block % (CHANGED_BLOCK_PERCENTAGE)	Percentage ratio of difference between query and database manipulation language (DML) in the database application. This value changes according to indexes and application utilization status.	--	double	No	All	(db block changes / (block gets + consistent gets)) * 100
Consistent Change % (CONSISTENT_CHANGE_PERCENTAGE)	Percentage ratio of extents used for consistency of application read operations	--	double	No	All	(consistent changes / consistent gets) * 100
Continued Row % (CONTINUED_ROW_PERCENTAGE)	Percentage ratio of continued rows. The value is close to 0 unless the	--	double	No	All	(table fetch continued row / (table fetch by rowid + table

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Continued Row % (CONTINUED_ROW_PERCENTAGE)	application handles LONG columns.	--	double	No	All	scan rows gotten)) * 100
Current Logons (CURRENT_LOGONS)	Number of current login to Oracle Database	--	long	No	All	V$SYSSTAT.VALUE
Deadlocks (LOCK_DEADLOCKS)	Number of deadlocks caused by locked DML processing	--	double	No	All	V$SYSSTAT.VALUE
Dict Cache Get Misses % (DICTIONARY_CACHE_GET_MISSES_PERCENTAGE)	Percentage ratio of data requests issued due to cache miss	--	double	No	All	(SUM(V $ROWCACHE.GETMISSES) / SUM(V $ROWCACHE.GETS)) * 100
Disk Sorts (SORTS_DISK)	Number of disk sort operations	--	double	No	All	V$SYSSTAT.VALUE
Free List Wait Events (FREE_LIST_WAIT_EVENTS)	Number of wait events in the free list	--	double	No	All	V$WAITSTAT.COUNT where class = 'free list'
Lib Cache Miss % (LIBRARY_CACHE_MISS_PERCENTAGE)	Library cache miss rate. This field means the ratio of times the allocated objects in library cache are reloaded. As the value of this field increases, the amount of resources in use also increases.	--	double	No	All	(SUM(V $LIBRARYCACHE.RELOADS) /SUM(V $LIBRARYCACHE.PINS)) * 100
Lock Conversions (LOCK_CONVERSIONS)	Number of enqueues (locks) whose mode was changed (such as from share to lock)	--	double	No	All	V$SYSSTAT.VALUE
Lock Releases (LOCK_RELEASES)	Number of times enqueuing (locking) was released	--	double	No	All	V$SYSSTAT.VALUE
Lock Requests (LOCK_REQUESTS)	Number of times enqueuing (locking) was requested	--	double	No	All	V$SYSSTAT.VALUE
Lock Timeouts (LOCK_TIMEOUTS)	Number of times an enqueuing (locking) request was not permitted within the allocated time	--	double	No	All	V$SYSSTAT.VALUE
Lock Waits (LOCK_WAITS)	Number of times an enqueuing (locking) request was placed in wait status. The difference between	--	double	No	All	V$SYSSTAT.VALUE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Lock Waits (LOCK_WAITS)	the enqueuing requests count and the enqueuing waits count is the number of times the request was not treated as an enqueuing request.	--	double	No	All	V$SYSSTAT.VALUE
Logical Reads (LOGICAL_READS)	Number of logical read operations in read consistency mode and number of requests to the current copy of blocks	--	double	No	All	db block gets + consistent gets
Memory Sorts (SORTS_MEMORY)	Number of sort operations in memory	--	double	No	All	V$SYSSTAT.VALUE
Non-Index Lookups % (NON_INDEX_LOOKUPS)	Percentage ratio of full table scans that do not involve caching	--	double	No	All	(table scans (long tables) / (table scans (short tables) + table scans (long tables))) * 100
Physical Reads (PHYSICAL_READS)	Number of physical read operations on database block from disk	--	double	No	All	physical reads - physical reads direct - physical reads direct (lob)
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations on the disk by DBWR	--	double	No	All	V$SYSSTAT.VALUE
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PD)	--	string(4)	No	All	Remote Monitor Collector
Recursive Calls (RECURSIVE_CALLS)	Number of user calls processed	--	double	No	All	V$SYSSTAT.VALUE
Recursive To User Call % (RECURSIVE_TO_USER_CALL_PERCENTAGE)	Correct values cannot be collected in this field. Percentage indicating overhead	--	double	No	All	(recursive calls / user calls) * 100
Redo Alloc Immediate % (REDO_ALLOC_IMMEDIATE_HIT_PERCENTAGE)	Success rate of immediately acquiring REDO allocation latch	--	double	No	All	(1 - (V $LATCH.IMMEDIATE_MISSES / (V $LATCH.IMMEDIATE_GETS + V $LATCH.IMMEDIATE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Redo Alloc Immediate % (REDO_ALLOC_IMMEDIATE_HIT_PERCENTAGE)	Success rate of immediately acquiring REDO allocation latch	--	double	No	All	_MISSES))) * 100 where V$LATCH.NAME = 'redo allocation'
Redo Alloc Willing to Wait % (REDO_ALLOC_WILLING_TO_WAIT_HIT_PERCENTAGE)	Success rate of acquiring REDO allocation latch from cache	--	double	No	All	(1 - (V$LATCH.MISSES / V$LATCH.GETS)) * 100 where name = 'redo allocation'
Redo Copy Immediate % (REDO_COPY_IMMEDIATE_HIT_PERCENTAGE)	Success rate of immediately acquiring REDO copy latch	--	double	No	All	(1 - (V$LATCH.IMMEDIATE_MISSES / (V$LATCH.MMEDIATE_GETS + V$LATCH.IMMEDIATE_MISSES))) * 100 where name = 'redo copy'
Redo Copy Willing to Wait % (REDO_COPY_WILLING_TO_WAIT_HIT_PERCENTAGE)	Success rate of acquiring REDO copy latch from cache	--	double	No	All	(1 - (V$LATCH.MISSES / V$LATCH.GETS)) * 100 where name = 'redo copy'
Redo Log Buffer Alloc Retries (REDO_LOG_BUFFER_ALLOC_RETRIES)	Number of waits that occurred when an attempt was made to allocate the REDO log buffer	--	double	No	All	V$SYSSTAT.VALUE
Redo Log Buffer Wait % (REDO_LOG_BUFFER_WAIT_PERCENTAGE)	Percentage of waits that occurred when an attempt was made to allocate the REDO log buffer	--	double	No	All	(redo buffer allocation retries / redo entries) * 100
Redo Log Space Requests (REDO_LOG_SPACE_REQUESTS)	Number of times Oracle must wait for disk spaces to be allocated to REDO log entry because the active log file is full.	--	double	No	All	V$SYSSTAT.VALUE
Redo Log Space Wait % (REDO_LOG_SPACE_WAIT_PERCENTAGE)	Percentage of waiting time for disk space to be allocated for the REDO log entry.	--	double	No	All	(redo log space requests / redo entries) * 100
Row Source % (ROW_SOURCE_PERCENTAGE)	Percentage ratio of rows obtained by full-table scan	--	double	No	All	(table scan rows gotten / (table fetch by rowid + table scan rows gotten)) * 100
SQL Executing (SQL_EXECUTING)	This field is not supported.	--	double	No	Not supported	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
SQL Executing (SQL_EXECUTING)	Number of current SQL executions	--	double	No	Not supported	Remote Monitor Collector
SQL Net Bytes Rcvd (SQL_NET_BYTES_RECEIVED)	Amount of data received from clients via SQL*Net	--	double	No	All	V$SYSSTAT.VALUE
SQL Net Bytes Sent (SQL_NET_BYTES_SENT)	Amount of data sent to clients via SQL*Net	--	double	No	All	V$SYSSTAT.VALUE
Session CPU Usage (SESSION_CPU_USAGE)	CPU time used in 1/100 seconds. To collect the value of this field, the TIMED_STATISTICS parameter must be set to TRUE in the init.ora file.	--	double	No	All	V$SYSSTAT.VALUE
Session Cursor Cache Count (SESSION_CURSOR_CACHE_COUNT)	Number of session cursors cached. The SESSION_CACHED_CURSORS parameter in the init.ora file specifies the maximum value of this field.	--	double	No	All	V$SYSSTAT.VALUE
Session Cursor Cache Hit % (SESSION_CURSOR_CACHE_HIT_PERCENTAGE)	Hit rate of analysis calls in session's cursor cache	--	double	No	All	(session cursor cache hits / session cursor cache count) * 100
Session Cursor Cache Hits (SESSION_CURSOR_CACHE_HITS)	Number of times a cursor was found in the session's cursor cache by analysis call	--	double	No	All	V$SYSSTAT.VALUE
Session PGA Memory (SESSION_PGA_MEMORY)	Size of PGA memory currently being used in bytes	--	double	No	All	SUM(V$SESSTAT.VALUE)
Session UGA Memory (SESSION_UGA_MEMORY)	Size of used session memory in bytes	--	double	No	All	SUM(V$SESSTAT.VALUE)
Sort Overflow % (SORT_OVERFLOW_PERCENTAGE)	Percentage ratio of sort operations using a temporary segment	--	double	No	All	(sorts (disk) / (sorts (memory) + sorts (disk))) * 100
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Sys Undo Blk Wait Events (SYSTEM_UNDO_BLOCK_WAIT_EVENTS)	Number of block wait events for the system's rollback segment	--	double	No	All	V$WAITSTAT.COUNT where class = 'system undo block'
Sys Undo Hdr Wait Events (SYSTEM_UNDO_HEADER_WAIT_EVENTS)	Number of header block wait events for the system's rollback segment	--	double	No	All	V$WAITSTAT.COUNT where class = 'system undo header'
Total Logons (TOTAL_LOGONS)	Number of logins to the server	--	double	No	All	V$SYSSTAT.VALUE
Total SQL Executions (TOTAL_SQL_EXECUTIONS)	Total number of SQL executions	--	double	No	All	execute count
Undo Blk Wait Events (UNDO_BLOCK_WAIT_EVENTS)	Number of block wait events for other rollback segments	--	double	No	All	V$WAITSTAT.COUNT where class = 'undo block'
Undo Hdr Wait Events (UNDO_HEADER_WAIT_EVENTS)	Number of header block wait events for other rollback segments	--	double	No	All	V$WAITSTAT.COUNT where class = 'undo header'
User Calls (USER_CALLS)	Number of user calls processed	--	double	No	All	V$SYSSTAT.VALUE
User Calls / Parse (USER_CALLS_PER_PARSE)	Application management status in the context area	--	double	No	All	user calls / parse count (total)
User Commits (USER_COMMITS)	Number of transactions	--	double	No	All	V$SYSSTAT.VALUE
User Rollback % (USER_ROLLBACK_PERCENTAGE)	Failure rate of application transactions	--	double	No	All	(user rollbacks / (user commits + user rollbacks)) * 100
User Rollbacks (USER_ROLLBACKS)	Number of rollbacks	--	double	No	All	V$SYSSTAT.VALUE
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations	--	double	No	All	(physical writes / (physical reads + physical writes)) * 100

System Stat Summary Interval (PI)

Function

The System Stat Summary Interval (PI) record stores performance data, taken at specific intervals since the start of an instance, about key performance indicators.

Notes

If the monitoring target is Oracle Database 12c Release 2 or later in a CDB configuration, some fields in this record collect common performance data for database instances. The following table shows the relationship between the fields and performance data.

Fields	Performance data	
	When monitoring PDBs	When monitoring the root container (CDB$ROOT)
Dict Cache Get Misses % Lib Cache Miss % Redo Alloc Immediate % Redo Alloc Willing to Wait % Redo Copy Immediate % Redo Copy Willing to Wait %	Displays common performance data for database instances. Note The fields collect the same value when monitoring either the PDB or the root container (CDB$ROOT). To prevent alarm notification from multiple instances of PFM - RM for Oracle, select the instance to be monitored.	
Free List Wait Events Sys Undo Blk Wait Events Sys Undo Hdr Wait Events Undo Blk Wait Events Undo Hdr Wait Events	Displays performance data for the PDBs that are being monitored.	• Use administrative accounts (sys or system) Performance data for all PDBs and the root container (CDB$ROOT) are collected. • Use common user Performance data for the root container (CDB$ROOT) is collected.
Recursive To User Call % SQL Executing	As with non CDB, unable to collect valid performance data.	
Fields except for above	Displays performance data for the PDBs that are being monitored.	Displays common performance data for database instances.

Default and changeable values

Item	Default value	Changeable
Collection Interval	60	Y
Collection Offset	0	Y
Log	Yes	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

None

Lifetime

From the creation to the deletion of an Oracle instance

Record size

- Fixed part: 2,231 bytes
- Variable part: 0 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Block Changes/Tran (BLOCK_CHANGES_PER_TRANSACTION)	Rate at which each transaction executed DML operation [#2]	AVG	double	Yes[#6]	All	db block changes / user commits
Block Get/sec (BLOCK_GET_RATE)	Rate at which the application referenced the database[#2]	AVG	double	Yes[#6]	All	(db block gets + consistent gets) / second in interval
Block Visits/Tran (BLOCK_VISITS_PER_TRANSACTION)	Number of times a work database was loaded per transaction[#2]	AVG	double	Yes[#6]	All	(db block gets + consistent gets) / user commits
Buffer Busy Wait % (BUFFER_BUSY_WAIT_PERCENTAGE)	Percentage ratio of buffer busy waits[#2]	AVG	double	Yes[#6]	All	(V$SYSTEM_EVENT.TOTAL_WAITS where EVENT = 'buffer busy waits' / (consistent gets + db block gets)) * 100
Cache Hit % (CACHE_HIT_PERCENTAGE)	Buffer cache usage[#2]	AVG	double	Yes[#6]	All	(1 - (physical reads cache / (consistent gets from cache + db block gets from cache))) * 100
Call/sec (CALL_RATE)	Work demand rate applied to the instance by all work resources[#2]	AVG	double	Yes[#6]	All	recursive calls + user calls / seconds in interval
Calls/Tran (CALLS_PER_TRANSACTION)	Rate at which client requests were executed per transaction. You can use the value of this field to detect a change in the application or the utilization status. This value may increase significantly if unique queries increase.[#2]	AVG	double	No	All	user calls / user commits
Changed Block % (CHANGED_BLOCK_PERCENTAGE)	Percentage ratio of difference between query and database manipulation	AVG	double	Yes[#6]	All	(db block changes / (block gets +

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Changed Block % (CHANGED_BLOCK_PERCENTAGE)	language (DML) in the database application. This value changes according to indexes and application utilization status.#2	AVG	double	Yes#6	All	consistent gets)) * 100
Consistent Change % (CONSISTENT_CHANGE_PERCENTAGE)	Percentage indicating the extents for which the application needed to check the consistency of read operations#2	AVG	double	Yes#6	All	(consistent changes / consistent gets) * 100
Continued Row % (CONTINUED_ROW_PERCENTAGE)	Percentage ratio of continued rows. The value is close to 0 unless the application handles LONG columns. #2	AVG	double	Yes#6	All	(table fetch continued row / (table fetch by rowid + table scan rows gotten)) * 100
Current Logons (CURRENT_LOGONS)	Number of current logons to Oracle Database#2	AVG	long	No	All	V$SYSSTAT.VALUE
Deadlocks (LOCK_DEADLOCKS)	Number of deadlocks caused by locked DML processing#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Dict Cache Get Miss % (DICTIONARY_CACHE_GET_MISSES_PERCENTAGE)	Percentage ratio of data requests issued due to cache miss#2	AVG	double	Yes#6	All	(SUM(V $ROWCACHE.GETMISSES) / SUM(V $ROWCACHE.GETS)) * 100
Disk Sorts (SORTS_DISK)	Number of disk sort operations#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Free List Wait Events (FREE_LIST_WAIT_EVENTS)	Number of wait events in the free list#2	AVG	double	Yes	All	V$WAITSTAT.COUNT where class = 'free list'
I/O Ops/sec (IO_RATE)	Number of I/O operations per second#2	AVG	double	No	All	(physical reads + physical writes) / seconds in interval
Lib Cache Miss % (LIBRARY_CACHE_MISS_PERCENTAGE)	Library cache miss rate. This field means the ratio of times the allocated objects in library cache are reloaded. As the value of this field increases, the amount of resources in use also increases. #2	AVG	double	Yes#6	All	(SUM(V $LIBRARYCACHE.RELOADS) SUM(V $LIBRARYCACHE.PINS)) * 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Lock Conversions (LOCK_CONVERSIONS)	Number of enqueues (locks) whose mode was changed (such as from share to lock)#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Lock Hit % (LOCK_HIT_PERCENTAGE)	Percentage ratio of the number of accesses to data blocks to the total number of data block accesses. However, this is limited to cases that do not request a lock conversion. Only valid with an Oracle RAC configuration.#2	AVG	double	Yes#6	All	((consistent gets - global enqueue gets async) / consistent gets) * 100
Lock Releases (LOCK_RELEASES)	Number of times enqueuing (locking) was released#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Lock Requests (LOCK_REQUESTS)	Number of times enqueuing (locking) was requested#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Lock Timeouts (LOCK_TIMEOUTS)	Number of times an enqueuing (locking) request was not permitted within the allocated time#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Lock Waits (LOCK_WAITS)	Number of times an enqueuing (locking) request was placed in wait status. The difference between the enqueuing requests count and the enqueuing waits count is the number of times the request was not treated as an enqueuing request.#2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Logical Reads (LOGICAL_READS)	Number of logical read operations in read consistency mode and number of requests to the current copy of blocks#2	AVG	double	Yes	All	db block gets + consistent gets
Memory Sorts (SORTS_MEMORY)	Number of sort operations in memory#2	AVG	double	Yes	All	V$SYSSTAT.VALUE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Non-Index Lookups % (NON_INDEX_LOOKUPS)	Percentage ratio of full table scans that do not involve caching[#2]	AVG	double	Yes[#6]	All	(table scans (long tables) / (table scans (short tables) + table scans (long tables))) * 100
Physical Reads (PHYSICAL_READS)	Number of physical read operations on database block from disk[#2]	AVG	double	Yes	All	physical reads - physical reads direct - physical reads direct (lob)
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations on the disk by DBWR[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Ping Write % (PING_WRITE_PERCENTAGE)	A large value means that lock conversion occurred frequently. In the case of Oracle 11g R2 or later, this field is always set to 0.[#2]	AVG	double	Yes[#6]	All	(DBWR cross instance writes / physical writes) * 100
Read/sec (READ_RATE)	Number of read operations per second[#2]	AVG	double	No	All	physical reads / seconds in interval
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PI)[#1]	COPY	string(4)	No	All	Remote Monitor Collector
Recursive Calls (RECURSIVE_CALLS)	Number of user calls processed[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Recursive To User Call % (RECURSIVE_TO_USER_CALL_PERCENTAGE)	Correct values cannot be collected in this field. Percentage indicating overhead[#2]	AVG	double	Yes[#6]	All	(recursive calls / user calls) * 100
Redo Alloc Immediate % (REDO_ALLOC_IMMEDIATE_HIT_PERCENTAGE)	Success rate of immediately acquiring REDO allocation latch[#2]	AVG	double	Yes[#6]	All	(1 - (V $LATCH.IMMEDIATE_MISSES / (V $LATCH.IMMEDIATE_GETS + V $LATCH.IMMEDIATE_MISSES))) * 100 where V $LATCH.NAME = 'redo allocation'

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Redo Alloc Willing to Wait % (REDO_ALLOC_WILLING_TO_WAIT_HIT_PERCENTAGE)	Success rate of acquiring REDO allocation latch from cache#2	AVG	double	Yes#6	All	(1 - (V $LATCH.MISSES / V$LATCH.GETS)) * 100 where name = 'redo allocation'
Redo Copy Immediate % (REDO_COPY_IMMEDIATE_HIT_PERCENTAGE)	Success rate of immediately acquiring REDO copy latch#2	AVG	double	Yes#6	All	(1 - (V $LATCH.IMMEDIATE_ MISSES / (V $LATCH.IMMEDIATE_GETS + V $LATCH.IMMEDIATE_MISSES))) * 100 where V $LATCH.NAME = 'redo copy'
Redo Copy Willing to Wait % (REDO_COPY_WILLING_TO_WAIT_HIT_PERCENTAGE)	Success rate of acquiring REDO copy latch from cache#2	AVG	double	Yes#6	All	(1 - (V $LATCH.MISSES / V$LATCH.GETS)) * 100 where name = 'redo copy'
Redo Log Buffer Alloc Retries (REDO_LOG_BUFFER_ALLOC_RETRIES)	Number of waits that occurred when an attempt was made to allocate the REDO log buffer	AVG	double	Yes	All	V$SYSSTAT.VALUE
Redo Log Buffer Wait % (REDO_LOG_BUFFER_WAIT_PERCENTAGE)	Percentage of waits that occurred when an attempt was made to allocate the REDO log buffer	AVG	double	Yes#6	All	(redo buffer allocation retries / redo entries) * 100
Redo Log Space Requests (REDO_LOG_SPACE_REQUESTS)	Number of times Oracle must wait for disk spaces to be allocated to REDO log entry because the active log file is full. #2	AVG	double	Yes	All	V$SYSSTAT.VALUE
Redo Log Space Wait % (REDO_LOG_SPACE_WAIT_PERCENTAGE)	Percentage of waiting time until disk space is allocated for the REDO log entry#2	AVG	double	Yes#6	All	(redo log space requests / redo entries) * 100
Row Source % (ROW_SOURCE_PERCENTAGE)	Percentage ratio of rows obtained by full-table scan#2	AVG	double	Yes#6	All	(table scan rows gotten / (table fetch by rowid + table scan rows gotten)) * 100
SQL Executing (SQL_EXECUTING)	This field is not supported. Number of current SQL executions	AVG	double	No	Not supported	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
SQL Net Bytes Rcvd (SQL_NET_BYTES_RECEIVED)	Amount of data received from clients via SQL*Net[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
SQL Net Bytes Sent (SQL_NET_BYTES_SENT)	Amount of data sent to clients via SQL*Net[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Session CPU Usage (SESSION_CPU_USAGE)	If the value of the TIMED_STATISTICS parameter in the init.ora file is TRUE, the CPU time used (in 1/100 seconds); if the parameter value is FALSE, this field contains 0.[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Session Cursor Cache Count (SESSION_CURSOR_CACHE_COUNT)	Number of analysis calls for the session's cursor calls[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Session Cursor Cache Hit % (SESSION_CURSOR_CACHE_HIT_PERCENTAGE)	Hit rate of analysis calls in session's cursor cache[#2]	AVG	double	No	All	(session cursor cache hits / session cursor cache count) * 100
Session Cursor Cache Hits (SESSION_CURSOR_CACHE_HITS)	Number of times a cursor was found in the session's cursor cache by analysis call[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Session PGA Memory (SESSION_PGA_MEMORY)	Size of PGA memory currently being used in bytes[#2]	AVG	double	No	All	SUM(V$SESSTAT.VALUE)
Session UGA Memory (SESSION_UGA_MEMORY)	Size of used session memory in bytes[#2]	AVG	double	No	All	SUM(V$SESSTAT.VALUE)
Sort Overflow % (SORT_OVERFLOW_PERCENTAGE)	Percentage ratio of sort operations using a temporary segment [#2]	AVG	double	Yes[#6]	All	(sorts (disk) / (sorts (memory) + sorts (disk))) * 100
Start Time (START_TIME)	Collection start time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
Sys Undo Blk Wait Events (SYSTEM_UNDO_BLOCK_WAIT_EVENTS)	Number of block wait events for the system's rollback segment [#2]	AVG	double	Yes	All	V$WAITSTAT.COUNT where class = 'system undo block'

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Sys Undo Hdr Wait Events (SYSTEM_UNDO_HEADER_WAIT_EVENTS)	Number of header block wait events for the system's rollback segment [#2]	AVG	double	Yes	All	V$WAITSTAT.COUNT where class = 'system undo header'
Total Logons (TOTAL_LOGONS)	Number of logins to the server [#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
Total SQL Executions (TOTAL_SQL_EXECUTIONS)	Total number of SQL executions [#2]	AVG	double	Yes	All	execute count
Trans/sec (TRANSACTION_RATE)	Number of transactions per second[#2]	AVG	double	No	All	user commits / seconds in interval
Undo Blk Wait Events (UNDO_BLOCK_WAIT_EVENTS)	Number of block wait events for other rollback segments[#2]	AVG	double	Yes	All	V$WAITSTAT.COUNT where class = 'undo block'
Undo Hdr Wait Events (UNDO_HEADER_WAIT_EVENTS)	Number of header block wait events for other rollback segments[#2]	AVG	double	Yes	All	V$WAITSTAT.COUNT where class = 'undo header'
User Calls (USER_CALLS)	Number of user calls processed[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
User Calls / Parse (USER_CALLS_PER_PARSE)	Application management status in the context area [#2]	AVG	double	Yes[#6]	All	user calls / parse count (total)
User Commits (USER_COMMITS)	Number of transactions[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
User Rollback % (USER_ROLLBACK_PERCENTAGE)	Failure rate of application transactions [#2]	AVG	double	No	All	(user rollbacks / (user commits + user rollbacks)) * 100
User Rollbacks (USER_ROLLBACKS)	Number of rollbacks[#2]	AVG	double	Yes	All	V$SYSSTAT.VALUE
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations [#2]	AVG	double	No	All	(physical writes / (physical reads + physical writes)) * 100
Writes/sec (WRITES_RATE)	Number of write operations per second[#2]	AVG	double	No	All	physical writes / seconds in interval

#6

The field value is calculated based on the delta of the amount of collected data from Oracle Database.

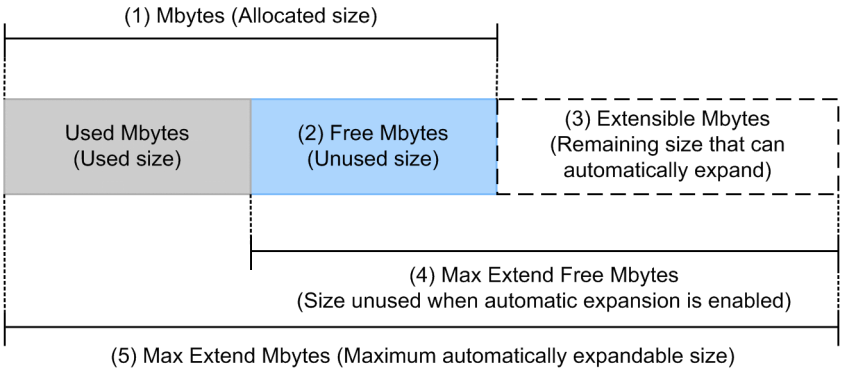
Tablespace (PD_PDTS)

Function

The Tablespace (PD_PDTS) record stores performance data indicating the status (at a specific point in time) of tablespaces in a database. PFM - RM for Oracle creates one record for each tablespace in a database. This is a multi-instance record.

To monitor the tablespace size, the size of the currently allocated space can be monitored. However, if automatic expansion is enabled, the size of the unallocated space can also be monitored. The following figure shows the relationship between the fields associated with tablespace sizes.

Figure 5–3: Relationship between the fields associated with tablespace sizes



Expressions for calculating the values of fields related to the space size percentage:

- Free % (percentage of free space)
  ([Free Mbytes (2)] / [Mbytes (1)]) × 100
- Max Extend Free % (percentage of unused size in relation to the maximum size of automatic expansion)
  ([Max Extend Free Mbytes (4)] / [Max Extend Mbytes (5)]) × 100
- Extensible Mbytes % (percentage of remaining size that can automatically expand)
  ([Extensible Mbytes (3)] / [Max Extend Mbytes (5)]) × 100

If the size of automatic expansion is unlimited, the Max Extend Mbytes field displays the value based on the theoretical maximum size that can be set for Oracle Database. The values of the other fields are calculated based on the value of the Max Extend Mbytes field.

The values set for localtemp_option and undospace_option in the instance information affect only values of the Used Mbytes field and Free Mbytes field. The following figures show effects of the values of localtemp_option and undospace_option.

Figure 5–4: Effects of the value of localtemp_option

Temporary tablespace	100MB
Space that was allocated once	80MB
Space in use	40MB

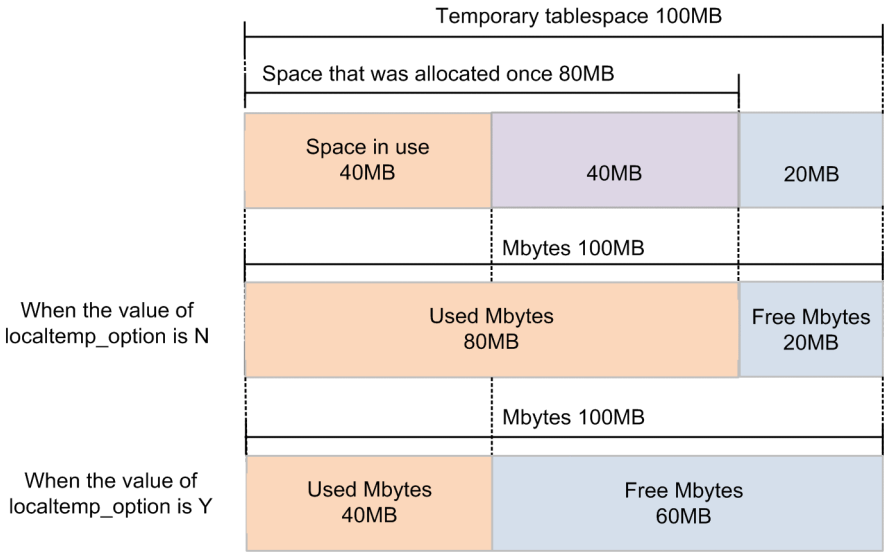
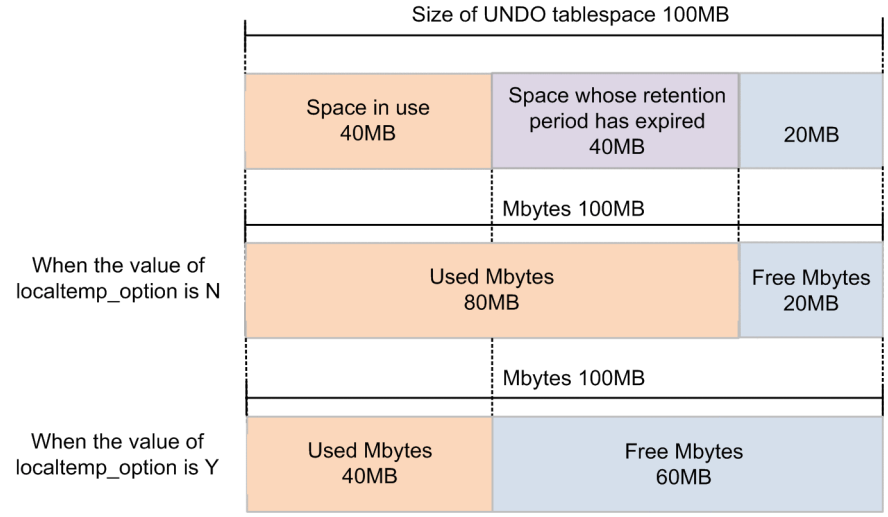


Figure 5–5: Effects of the value of undospace_option

Size of UNDO tablespace	100MB
Space whose retention period has expired	40MB
Space in use	40MB



Default and changeable values

Item	Default value	Changeable
Collection Interval	3600	Y
Collection Offset	30	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PD_PDTS_TABLESPACE_NAME

Lifetime

From the creation to the deletion of a tablespace

Record size

- Fixed part: 935 bytes
- Variable part: 163 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Auto Extensible (AUTO_EXTENSIBLE)	Indicates whether automatic expansion of the tablespace is enabled when the monitoring target is Oracle Database 11g R2 or later. YES is set if automatic expansion is enabled. NO is set if automatic expansion is disabled. YES is set if automatic expansion is enabled for at least one of the data files which comprise the tablespace. A blank is set if the monitoring target is Oracle Database 11g R1 or earlier.	--	string(3)	No	All	DBA_DATA_FILES.AUTOEXTENSIBLE
Blocks (BLOCKS)	Size of tablespace in Oracle blocks	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(DBA_DATA_FILES.BLOCKS) • For locally managed temporary tablespaces:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Blocks (BLOCKS)	Size of tablespace in Oracle blocks	--	ulong	No	All	SUM(DBA_TEMP_FILES.BLOCKS)
Data Files (DATAFILES)	Number of data files in use by the tablespace	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_DATA_FILES) • For locally managed temporary tablespaces: COUNT(DBA_TEMP_FILES)
Extensible Mbytes (EXTENSIBLE_BYTES)	Size remaining in megabytes for automatic expansion when the monitoring target is Oracle Database 11g R2 or later. 0 is set if automatic expansion is disabled, the maximum size has already been reached, or the monitoring target is Oracle Database 11g R1 or earlier.	--	double	No	All	MAX_BYTES - BYTES
Extensible Mbytes % (PERCENT_EXTENSIBLE_BYTES)	Percentage of space remaining for automatic expansion if the monitoring target is Oracle Database 11g R2 or later. 0 is set if automatic expansion is disabled, the maximum size has already been reached, or the monitoring target is Oracle Database 11g R1 or earlier.	--	double	No	All	(EXTENSIBLE_BYTES / MAX_BYTES) * 100
Extents (EXTENTS)	Number of extents	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Extents (EXTENTS)	Number of extents	--	ulong	No	All	tablespaces, or directory managed temporary tablespaces: SUM(DBA_SEGMENTS.EXTENTS) • For locally managed temporary tablespaces when the value of localtemp_option is Y: SUM(DBA_TEMP_FILES.BYTES / V$TEMP_EXTENT_MAP.BYTES) • For locally managed temporary tablespaces when the value of localtemp_option is N: SUM(V$SORT_SEGMENT.TOTAL_EXTENTS)
Free % (PERCENT_FREE)	Percentage ratio of free space	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: (SUM(DBA_FREE_SPACE.BYTES) / DBA_DATA_FILES.BYTES) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is Y: ((SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_MAP.BYTES))) / DBA_TEMP_FILES.BYTES) * 100

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free % (PERCENT_FREE)	Percentage ratio of free space	--	double	No	All	• For locally managed temporary tablespaces when the value of localtemp_option is N: (SUM(V $TEMP_SPACE_HEADER.BYTES_FREE) / (DBA_TEMP_FILES.BYTES)) * 100 • For the UNDO tablespaces when the value of undospace_option is Y: ((SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / DBA_DATA_FILES.BYTES) * 100
Free Extents (FREE_EXTENTS)	Number of free extents.	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_FREE_SPACE) • For locally managed temporary tablespaces when the value of localtemp_option is Y: SUM(DBA_TEMP_FILES.BYTES / V $TEMP_EXTENT_MAP.BYTES) - V $SORT_SEGMENT.USED_EXTENTS • For locally managed temporary tablespaces when the value of localtemp_option is N:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Free Extents (FREE_EXTENTS)	Number of free extents.	--	ulong	No	All	COUNT(V $TEMP_SPACE_HEADER)
Free Mbytes (FREE_BYTES)	Size of free space in megabytes.	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N: SUM(DBA_FREE_SPACE.BYTES) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (SUM(DBA_TEMP_FILES.BYTES) - (V $SORT_SEGMENT.USED_EXTENTS * AVG(V $TEMP_EXTENT_MAP.BYTES))) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: SUM(V $TEMP_SPACE_HEADER.BYTES_FREE) / (1024 * 1024) • For the UNDO tablespaces when the value of undospace_option is Y: (SUM(DBA_FREE_SPACE.BYTES) + SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 x 1024)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Increase % (PCT_INCREASE)	Default rate of increase in the extent size	--	short	No	All	DBA_TABLESPACES. PCT_INCREASE
Initial Extent (INITIAL_EXTENT)	Default size of the initial extent	--	double	No	All	DBA_TABLESPACES. INITIAL_EXTENT
Max Extend Free % (MAX_PERCENT_FREE)	Percentage of the unused size in relation to the maximum automatically expandable size if the monitoring target is Oracle Database 11g R2 or later. The value is the same as the Free % field when automatic expansion is disabled or the maximum size has already been reached. The value is 0 when the monitoring target is Oracle Database 11g R1 or earlier.	--	double	No	All	(MAX_FREE_BYTES / MAX_BYTES) * 100
Max Extend Free Mbytes (MAX_FREE_BYTES)	Size unused when automatic expansion is enabled and the monitoring target is Oracle Database 11g R2 or later. This size is the total of the unused size and the automatically expandable size in megabytes. The value is the same as the Free Mbytes field when automatic expansion is disabled or the maximum size has already been reached. The value is 0 when the monitoring target is Oracle Database 11g R1 or earlier.	--	double	No	All	MAX_BYTES - USED_BYTES

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Max Extend Mbytes (MAX_BYTES)	Maximum automatic expandable size (in megabytes) when the monitoring target is Oracle Database 11g R2 or later. The value is the same as the Mbytes field when automatic expansion is disabled or the maximum size has already been reached. The value is 0 when the monitoring target is Oracle Database 11g R1 or earlier.	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(DBA_DATA_FILES.MAXBYTES) / (1024 * 1024) • For locally managed temporary tablespaces: SUM(DBA_TEMP_FILES.MAXBYTES) / (1024 * 1024)
Max Extents (MAX_EXTENTS)	Default maximum number of extents	--	ulong	No	All	DBA_TABLESPACES.MAX_EXTENTS
Mbytes (BYTES)	Size of the tablespace in megabytes	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(DBA_DATA_FILES.BYTES) / (1024 * 1024) • For locally managed temporary tablespaces: SUM(DBA_TEMP_FILES.BYTES) / (1024 * 1024)
Min Extents (MIN_EXTENTS)	Default minimum number of extents	--	long	No	All	DBA_TABLESPACES.MIN EXTENTS
Next Extent (NEXT_EXTENT)	Default size of the incremental extent	--	double	No	All	DBA_TABLESPACES.NEXT_EXTENT
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type	Record name (always PDTS)	--	string(4)	No	All	Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(INPUT_RECORD_TYPE)	Record name (always PDTS)	--	string(4)	No	All	Remote Monitor Collector
Segments (SEGMENTS)	Number of segments. Always 1 for locally managed temporary tablespaces when the value of localtemp_option is Y.	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_SEGMENTS) • For locally managed temporary tablespaces when the value of localtemp_option is Y: Remote Monitor Collector • For locally managed temporary tablespaces when the value of localtemp_option is N: COUNT(V$SORT_SEGMENT)
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	Time_t	No	All	Remote Monitor Collector
Status (STATUS)	Tablespace status. Valid values are INVALID (tablespace was deleted), OFFLINE, and ONLINE.	--	string(9)	No	All	DBA_TABLESPACES STATUS
Tablespace Name (TABLESPACE_NAME)	Tablespace name	--	string(30)	No	All	DBA_TABLESPACES.TABLESPACE_NAME
Used Mbytes (USED_BYTES)	Size of used area in megabytes.	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, dictionary managed temporary tablespaces, or the UNDO tablespaces when the value of undospace_option is N:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Used Mbytes (USED_BYTES)	Size of used area in megabytes.	--	double	No	All	(SUM(DBA_DATA_FILES.BYTES) - SUM(DBA_FREE_SPACE.BYTES)) / (1024 *1024) • For locally managed temporary tablespaces when the value of localtemp_option is Y: (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_MAP.BYTES)) / (1024 * 1024) • For locally managed temporary tablespaces when the value of localtemp_option is N: (SUM(DBA_TEMP_FILES.BYTES) - SUM(V$TEMP_SPACE_HEADER.BYTES_FREE)) / (1024 *1024) • For the UNDO tablespaces when the value of undospace_option is Y: (DBA_DATA_FILES.BYTES - SUM(DBA_FREE_SPACE.BYTES) - SUM(DBA_UNDO_EXTENTS.BYTES) WHERE STATUS='EXPIRED') / (1024 * 1024)
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

Tablespace Fragmentation (PD_PDTF)

Function

The Tablespace Fragmentation (PD_PDTF) record stores performance data indicating the status (at a specific point in time) of fragmentation of tablespaces. PFM - RM for Oracle creates one record for each tablespace in a database. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	135	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PD_PDTF_TABLESPACE_NAME

Lifetime

From the creation to the deletion of a tablespace

Record size

- Fixed part: 935 bytes
- Variable part: 79 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Avg Fragment (AVERAGE_FRAGMENT)	Average fragment size in bytes. The value of this field is free space when this field displays locally managed temporary tablespaces and the value of localtemp_option is Y, because fragment to the locally managed temporary tablespace is 1.	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(DBA_FREE_SPACE.BYTES) / COUNT(DBA_FREE_SPACE) where DBA_TABLESPACES.TABLESPACE_NAME = DBA_FREE_SPACE.TABLESPACE_NAME(+) • For locally managed temporary tablespaces when the value of localtemp_option is Y:

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Avg Fragment (AVERAGE_FRAGMENT)	Average fragment size in bytes. The value of this field is free space when this field displays locally managed temporary tablespaces and the value of localtemp_option is Y, because fragment to the locally managed temporary tablespace is 1.	--	double	No	All	SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V&TEMP_EXTENT_MAP.BYTES)) • For locally managed temporary tablespaces when the value of localtemp_option is N: SUM(V$TEMP_SPACE_HEADER.BYTES_FREE) / COUNT(V$TEMP_SPACE_HEADER) where DBA_TEMP_FILES.FILE_ID = V$TEMP_SPACE_HEADER.FILE_ID(+)
Extents (EXTENTS)	Number of extents	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(DBA_SEGMENTS.EXTENTS) • For locally managed temporary tablespaces when the value of localtemp_option is N: SUM(V$SORT_SEGMENT.TOTAL_EXTENTS)
Fragments (FRAGMENTS)	Number of fragments. Always 1 for locally managed temporary tablespaces when the value of localtemp_option is Y.	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_FREE_SPACE) where DBA_TABLESPACES.TABLESPACE_NAME = DBA_FREE_SPACE.TABLESPACE_NAME(+) • For locally managed temporary tablespaces when the value of localtemp_option is Y: Remote Monitor Collector • For locally managed temporary tablespaces

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Fragments (FRAGMENTS)	Number of fragments. Always 1 for locally managed temporary tablespaces when the value of localtemp_option is Y.	--	ulong	No	All	when the value of localtemp_option is N: COUNT(V$TEMP_SPACE_HEADER) where DBA_TEMP_FILES.FILE_ID = V$TEMP_SPACE_HEADER.FILE_ID(+)
High Max Extents (HIGH_MAX_EXTENTS)	Number of segments whose PCT_MAX_EXTENTS value exceeds 90%	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_SEGMENTS) where EXTENTS > MAX_EXTENTS * 0.9 • For locally managed temporary tablespaces: COUNT(V$SORT_SEGMENT) where EXTENT_SIZE > TOTAL_EXTENTS * 0.9
Largest Fragment (LARGEST_FRAGMENT)	Largest fragment size in bytes The value of this field is free space when this field displays locally managed temporary tablespaces and the value of localtemp_option is Y, because fragment to the locally managed temporary tablespace is 1.	--	double	No	All	• For dictionary managed permanent tabelspaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: MAX(DBA_FREE_SPACE.BYTES) where DBA_TABLESPACES.TABLESPACE_NAME = DBA_FREE_SPACE.TABLESPACE_NAME(+) • For locally managed temporary tablespaces when the value of localtemp_option is Y: SUM(DBA_TEMP_FILES.BYTES) - (V$SORT_SEGMENT.USED_EXTENTS * AVG(V$TEMP_EXTENT_MAP.BYTES)) • For locally managed temporary tablespaces: MAX(V$TEMP_SPACE_HEA

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Largest Fragment (LARGEST_FRAGMENT)	Largest fragment size in bytes The value of this field is free space when this field displays locally managed temporary tablespaces and the value of localtemp_option is Y, because fragment to the locally managed temporary tablespace is 1.	--	double	No	All	DER.BYTES_FREE) where DBA_TEMP_FILES. FILE_ID = V $TEMP_SPACE_HEA DER.FILE_ID(+)
Largest Fragment % (LARGEST_FRAGMENT_ PERCENT)	Percentage ratio of tablespace in the largest fragment	--	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: (MAX(DBA_FREE_S PACE.BYTES) / SUM(DBA_DATA_FI LES.BYTES)) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is Y: ((SUM(DBA_TEMP_ FILES.BYTES) - (V $SORT_SEGMENT.U SED_EXTENTS * AVG(V $TEMP_EXTENT_MA P.BYTES))) / SUM(DBA_TEMP_FI LES_BYTES)) * 100 • For locally managed temporary tablespaces when the value of localtemp_option is N: (MAX(V $TEMP_SPACE_HEA DER.BYTES_FREE) / SUM(DBA_TEMP_FI LES.BYTES)) * 100
Next Alloc Fails (NEXT_ALLOC_FAILS)	Indicates whether the following extent allocation failed. For failure: 1	--	ulong	No	All	• For locally managed permanent tablespaces: MAX(DBA_SEGMENT S.NEXT_EXTENT) > MAX(DBA_FREE_SP ACE.BYTES)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Next Alloc Fails (NEXT_ALLOC_FAILS)	For success: 0 These results take effect for the following conditions: • The tablespace is a locally managed tablespace. • Uniform extent management is performed for the extent. 0 is returned for any other conditions.	--	ulong	No	All	• For locally managed permanent tablespaces: MAX(DBA_SEGMENTS.NEXT_EXTENT) > MAX(DBA_FREE_SPACE.BYTES)
Overextended (OVEREXTENDED)	Number of segments with more than five extents	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_SEGMENTS) where EXTENTS > 5 • For locally managed temporary tablespaces: COUNT(V$SORT_SEGMENT) where TOTAL_EXTENTS > 5
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDTF)	--	string(4)	No	All	Remote Monitor Collector
Segments (SEGMENTS)	Number of segments Always 1 for locally managed temporary tablespaces when the value of localtemp_option is Y.	--	ulong	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_SEGMENTS) • For locally managed temporary tablespaces when the value of localtemp_option is Y: Remote Monitor Collector

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Segments (SEGMENTS)	Number of segments Always 1 for locally managed temporary tablespaces when the value of localtemp_option is Y.	--	ulong	No	All	• For locally managed temporary tablespaces when the value of localtemp_option is N: COUNT(V $SORT_SEGMENT)
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Tablespace Name (TABLESPACE_NAME)	Tablespace name	--	string(30)	No	All	DBA_TABLESPACES.TABLESPACE_NAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector

Tablespace Interval (PI_PITS)

Function

The Tablespace Interval (PI_PITS) record stores performance data, taken at specific intervals, about tablespaces in a database. PFM - RM for Oracle creates one record for each tablespace in a database. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	3600	Y
Collection Offset	50	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PI_PITS_TABLESPACE_NAME

Lifetime

From the creation to the deletion of a tablespace

Record size

- Fixed part: 935 bytes
- Variable part: 291 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Datafiles (DATAFILES)	Number of data files in use by the tablespace#2	AVG	ulong	No	All	• Dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: COUNT(DBA_DATA_FILES) • For locally managed temporary tablespaces: COUNT(DBA_TEMP_FILES)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
I/O Ops/sec (IO_RATE)	Number of I/O operations per second[#2]	AVG	double	No	All	(SUM(V $FILESTAT.PHYRDS) + SUM(V $FILESTAT.PHYWRTS)) / seconds in interval
Physical Blocks Read (PHYSICAL_BLOCKS_READ)	Number of physical blocks read[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(V $FILESTAT.PHYBLKRD) • For locally managed temporary tablespaces: SUM(V $TEMPSTAT.PHYBLKRD)
Physical Blocks Written (PHYSICAL_BLOCKS_WRITTEN)	Number of physical blocks written[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(V $FILESTAT.PHYBLKWRT) • Locally managed temporary tablespaces: SUM(V $TEMPSTAT.PHYBLKWRT)
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed[#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Physical Reads (PHYSICAL_READS)	Number of physical read operations that were completed[#2]	AVG	double	Yes	All	temporary tablespaces: SUM(V$FILESTAT.PHYRDS) • For locally managed temporary tablespaces: SUM(V$TEMPSTAT.PHYRDS)
Physical Writes (PHYSICAL_WRITES)	Number of physical write operations that were completed [#2]	AVG	double	Yes	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(V$FILESTAT.PHYWRTS) • For locally managed temporary tablespaces: SUM(V$TEMPSTAT.PHYWRTS)
Reads/sec (READ_RATE)	Number of read operations per second[#2]	AVG	double	No	All	SUM(V$FILESTAT.PHYRDS) / seconds in interval
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record[#1]	COPY	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PITS)[#1]	COPY	string(4)	No	All	Remote Monitor Collector
Rollback Segments (ROLLBACK_SEGMENTS)	Number of rollback segments. Performance data about the locally managed tablespaces is not collected.[#2]	AVG	ulong	No	All	COUNT(DBA_ROLLBACK_SEGS)

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Rollback Segments Hit % (ROLLBACK_SEGMENTS_HIT_PERCENTAGE)	Percentage ratio of the HIT value to the GET value. Performance data about locally managed tablespaces is not collected.#2	AVG	double	No	All	((SUM(V$ROLLSTAT.GETS) - SUM(V$ROLLSTAT.WAITS)) / SUM(V$ROLLSTAT.GETS)) * 100
Rollback Segments Trans (ROLLBACK_SEGMENTS_TRANS)	Number of transactions that were active during data collection. Performance data about locally managed temporary tablespace is not collected.#2	AVG	long	No	All	SUM(V$ROLLSTAT.XACTS)
Sort Segments (SORT_SEGMENTS)	Number of sort segments. Performance data about locally managed permanent tablespaces is not collected.#2	AVG	ulong	No	All	COUNT(V$SORT_SEGMENT)
Sorting Users (SORTING_USERS)	Number of users that were active in the sort segment during data collection. Performance data about locally managed permanent tablespaces is not collected.#2	AVG	long	No	All	SUM(V$SORT_SEGMENT.CURRENT_USERS)
Start Time (START_TIME)	Collection start time for the performance data stored in the record#1	COPY	time_t	No	All	Remote Monitor Collector
Tablespace Name (TABLESPACE_NAME)	Tablespace name#1	COPY	string(30)	No	All	DBA_TABLESPACES.TABLESPACE_NAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations to all physical I/O operations #2	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Write % (WRITE_PERCENTAGE)	Percentage ratio of write operations to all physical I/O operations [#2]	AVG	double	No	All	permanent tablespaces, or dictionary managed temporary tablespaces: (SUM(V$FILESTAT.PHYWRTS) / (SUM(V$FILESTAT.PHYRDS) + SUM(V$FILESTAT.PHYWRTS))) * 100 • For locally managed temporary tablespaces: (SUM(V$TEMPSTAT.PHYWRTS) / SUM(V$TEMPSTAT.PHYWRTS) + SUM(V$TEMPSTAT.PHYRDS)) * 100
Writes/sec (WRITES_RATE)	Number of write operations per second[#2]	AVG	double	No	All	• For dictionary managed permanent tablespaces, locally managed permanent tablespaces, or dictionary managed temporary tablespaces: SUM(V$FILESTAT.PHYWRTS) / seconds in interval • For locally managed temporary tablespaces: SUM(V$TEMPSTAT.PHYWRTS) / seconds in interval

Transaction (PD_PDTR)

Function

The Transaction (PD_PDTR) record stores performance data indicating the status (at a specific point in time) of transactions. PFM - RM for Oracle creates one record for each transaction. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	145	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

- PD_PDTR_SID
- PD_PDTR_ADDRESS

Lifetime

From the start to the end of a transaction

Record size

- Fixed part: 935 bytes
- Variable part: 240 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Address (ADDRESS)	Address of the transaction status object	--	string(16)	No	All	V $TRANSACTION.ADDR
Cache Hit % (CACHE_HIT_PERCENTAGE)	Cache hit rate	--	double	No	All	(((V $TRANSACTION.LOG_IO + V $TRANSACTION.CR_GET) - V $TRANSACTION.PHY_IO) / (V $TRANSACTION.LOG_IO + V $TRANSACTION.CR_GET)) * 100
Consistent Change %	Percentage indicating the extents used for	--	double	No	All	(V $TRANSACTION.CR_CHANGE / V

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(CONSISTENT_CHANGE_PERCENTAGE)	consistency in transaction read operations	--	double	No	All	$TRANSACTION.CR_GET) * 100
Consistent Changes (CONSISTENT_CHANGES)	Number of consistent changes	--	double	No	All	V $TRANSACTION.CR_CHANGE
Consistent Gets (CONSISTENT_GETS)	Number of consistent acquisitions	--	double	No	All	V $TRANSACTION.CR_GET
Locks (LOCKS)	Number of transaction locks	--	double	No	All	COUNT(V $LOCKED_OBJECT)
Logical I/O (LOGICAL_IO)	Logical I/O	--	double	No	All	V $TRANSACTION.LOG_IO
No Undo (NO_UNDO)	Identifier of a non-UNDO transaction. For a non-UNDO transaction, the value of this field is Yes. For an UNDO transaction, the value is No.	--	string(3)	No	All	V $TRANSACTION.NOUNDO
Physical I/O (PHYSICAL_IO)	Physical I/O	--	double	No	All	V $TRANSACTION.PHY_IO
Previous XID (PREVIOUS_XID)	Parent transaction ID	--	string(30)	No	All	V $TRANSACTION.PRV_XIDUSN + V $TRANSACTION.PRV_XIDSLT + V $TRANSACTION.PRV_XIDSQN
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDTR)	--	string(4)	No	All	Remote Monitor Collector
Recursive (RECURSIVE)	Identifier of a recursive transaction. For a recursive transaction, the value of this field is Yes. For a non-recursive	--	string(3)	No	All	V $TRANSACTION.RECURSIVE

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Recursive (RECURSIVE)	transaction, the value is No.	--	string(3)	No	All	V$TRANSACTION.RECURSIVE
SID (SID)	Session ID	--	ulong	No	All	V$SESSION.SID where V$TRANSACTION.SES_ADDR = V$SESSION.ADDR
Space (SPACE)	Identifier of a space transaction. For a space transaction, the value of this field is Yes. For a non-space transaction, the value is No.	--	string(3)	No	All	V$TRANSACTION.SPACE
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Status (STATUS)	Transaction status	--	string(16)	No	All	V$TRANSACTION.STATUS
Tran Secs (TRANS_SECS)	Number of seconds since the start time	--	ulong	No	All	V$TRANSACTION.START_TIME
Tran Start (TRANS_START)	Start time	--	string(20)	No	All	V$TRANSACTION.START_TIME
Used Undo Blocks (USED_UNDO_BLOCKS)	Number of UNDO blocks used	--	double	No	All	V$TRANSACTION.USED_UBLK
Used Undo Records (USED_UNDO_RECORDS)	Number of UNDO records used	--	double	No	All	V$TRANSACTION.USED_UREC
User (USERNAME)	Oracle user name	--	string(30)	No	All	V$SESSION.USERNAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
XID (XID)	UNDO segment number, slot number, and sequence number (not applicable for an inactive transaction)	--	string(30)	No	All	V$TRANSACTION.XIDUSN + V$TRANSACTION.XIDSLOT + V$TRANSACTION.XIDSQN

Transaction Lock (PD_PDTL)

Function

The Transaction Lock (PD_PDTL) record stores performance data indicating the status (at a specific point in time) of transaction locks. PFM - RM for Oracle creates one record for each lock held by each transaction. This is a multi-instance record.

Default and changeable values

Item	Default value	Changeable
Collection Interval	600	Y
Collection Offset	140	Y
Log	No	Y
LOGIF	(Blank)	Y
Over 10 Sec Collection Time	No	N

ODBC key fields

PD_PDTL_XID

Lifetime

From the locking to the unlocking of an object

Record size

- Fixed part: 935 bytes
- Variable part: 180 bytes

Fields

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
Locked Mode (LOCKED_MODE)	Lock mode	--	string(20)	No	All	V $LOCKED_OBJECT.LOCKED_MODE
Object Name (OBJECT_NAME)	Name of the locked object	--	string(30)	No	All	DBA_OBJECTS.OBJECT_NAME where DBA_OBJECTS.OBJECT_ID = V $LOCKED_OBJECT.OBJECT_ID
Object Type (OBJECT_TYPE)	Object type	--	string(30)	No	All	DBA_OBJECTS.OBJECT_TYPE where DBA_OBJECTS.OBJECT_ID = V $LOCKED_OBJECT.OBJECT_ID
Owner	Owner of the object	--	string(30)	No	All	DBA_OBJECTS.OWNER where

PFM - View name (PFM - Manager name)	Description	Summary	Format	Delta	Supported version	Data source
(OWNER)	Owner of the object	--	string(30)	No	All	DBA_OBJECTS.OBJECT_ID = V$LOCKED_OBJECT.OBJECT_ID
Record Time (RECORD_TIME)	Collection termination time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
Record Type (INPUT_RECORD_TYPE)	Record name (always PDTL)	--	string(4)	No	All	Remote Monitor Collector
SID (SID)	Session ID	--	ulong	No	All	V$LOCKED_OBJECT.SESSION_ID
Start Time (START_TIME)	Collection start time for the performance data stored in the record	--	time_t	No	All	Remote Monitor Collector
User (USER_NAME)	Oracle user name	--	string(30)	No	All	V$LOCKED_OBJECT.ORACLE_USERNAME
VA DeviceID (VADEVICEID)	Device ID of virtual agent.	--	string(256)	No	All	Remote Monitor Collector
XID (XID)	Undo segment number, slot number, and sequence number. When a transaction is not running, 000 is set for this field.	--	string(30)	No	All	V$LOCKED_OBJECT.XIDUSN + V$LOCKED_OBJECT.XIDSLOT + V$LOCKED_OBJECT.XIDSQN

6 Messages

This chapter describes the PFM - RM for Oracle message format, lists the locations to which messages are output, shows which messages are output to `syslog` and the Windows event log, and describes the messages in detail.

6.1 Message format

This section shows the format of messages that are issued by PFM - RM for Oracle, and the notations used in this manual to explain the messages.

6.1.1 Format of output messages

This section explains the format of the messages issued by PFM - RM for Oracle. Each message consists of the message ID, followed by the message text. The message format is as follows:

```
KAVLnnnnn-Y message-text
```

The message ID indicates the following:

K
: System identifier.

AVL
: Indicates a PFM - RM for Oracle message.

nnnnn
: Serial number of the message. PFM - RM for Oracle message numbers are in the format 18*xxx*.

Y
: Type of message:

- E: Error
  Message issued when the system cancels processing.
- W: Warning
  Message issued when the system resumes processing after message output.
- I: Information
  Message in which the system provides the user with information.
- Q: Query
  Message in which the system prompts the user for a response.

The following is the correspondence of the message types to the syslog priority levels:

-E
- Level: LOG_ERR
- Description: Error message

-W
- Level: LOG_WARNING
- Description: Warning message

-I
- Level: LOG_INFO
- Description: Additional information message

-Q

(Not output)

The following is the correspondence of the message types to the Windows event log types:

-E

- Level: Error
- Description: Error message

-W

- Level: Warning
- Description: Warning message

-I

- Level: Information
- Description: Additional information message

-Q

(Not output)

6.1.2 Format of message explanations

This section describes the format used to explain messages in this manual. The portion of a message text that is shown in italics represents information that is variable depending on the situation. The manual lists the messages in the order of the message IDs. The following illustrates the format of a message explanation:

message-ID

message-text

Explanation of the message

(S)

Explains the processing performed by the system.

(O)

Explains the action the operator should take when the message is displayed.

Reference note:

When contacted by an operator, see *7. Error Handling Procedures*, collect the log information, and conduct initial checking. When you conduct initial checking to determine the cause of a problem, examine all applicable log information, such as the log information for the OS (Windows event log for Windows and `syslog` for UNIX) and the log information output by PFM - RM for Oracle. This log information enables you to understand the details of the problem, take appropriate action, and prevent the problem from occurring in the future. You should also make a record of the operations that led to the problem and determine whether or not the problem is likely to recur.

6.2 Message output destinations

This section shows the output destinations of the messages issued by PFM - RM for Oracle.

In Table 6-1, Y and N have the following meanings:

Legend:

Y: Message is output.

N: Message is not output.

Table 6–1: PFM - RM for Oracle message output destinations

Message ID	Output destination								
	syslog	Windows event log	Common message log	Standard output	Standard error output	Agent log		JP1 system event#1	Agent event#2
						Normal log	Error log		
KAVL18001-I	Y	Y	Y	N	N	N	N	N	N
KAVL18002-E	Y	Y	Y	N	N	N	N	N	N
KAVL18003-I	Y	Y	Y	N	N	N	N	N	N
KAVL18004-E	Y	Y	Y	N	N	N	N	N	N
KAVL18009-W	N	N	Y	N	N	N	N	N	N
KAVL18010-E	Y	Y	Y	N	N	N	N	N	N
KAVL18011-E	Y	Y	Y	N	N	N	N	N	N
KAVL18014-E	Y	Y	Y	N	N	N	N	N	N
KAVL18015-E	Y	Y	Y	N	N	N	N	N	N
KAVL18017-E	Y	Y	Y	N	N	N	N	N	N
KAVL18018-E	Y	Y	Y	N	N	N	N	N	N
KAVL18019-W	N	N	Y	N	N	N	N	N	N
KAVL18020-E	Y	Y	Y	N	N	N	N	N	N
KAVL18021-E	Y	Y	Y	N	N	N	N	N	N
KAVL18022-E	Y	Y	Y	N	N	N	N	N	N
KAVL18023-E	Y	Y	Y	N	N	N	N	N	N
KAVL18301-W	N	N	Y	N	N	N	N	N	N
KAVL18302-W	N	N	Y	N	N	N	N	N	N
KAVL18303-E	Y	Y	Y	N	N	N	N	N	N
KAVL18304-E	Y	Y	Y	N	N	N	N	N	N
KAVL18305-E	Y	Y	Y	N	N	N	N	N	N
KAVL18306-W	N	N	Y	N	N	N	N	N	N
KAVL18401-W	N	N	Y	N	N	N	N	Y	N
KAVL18402-E	Y	Y	Y	N	N	N	N	N	N

Message ID	Output destination								
	syslog	Windows event log	Common message log	Standard output	Standard error output	Agent log		JP1 system event#1	Agent event#2
						Normal log	Error log		
KAVL18501-E	N	N	N	Y#3	N	N	N	N	N
KAVL18502-E	N	N	N	Y#3	N	N	N	N	N
KAVL18504-E	N	N	N	Y#4	N	N	N	N	N
KAVL18505-I	N	N	N	Y#5	N	N	N	N	N
KAVL18506-E	N	N	N	Y#5	N	N	N	N	N
KAVL18507-E	N	N	N	Y#5	N	N	N	N	N
KAVL18508-E	N	N	N	Y#5	N	N	N	N	N
KAVL18509-E	N	N	N	Y#5	N	N	N	N	N
KAVL18510-E	N	N	N	Y#5	N	N	N	N	N
KAVL18511-E	N	N	N	Y#5	N	N	N	N	N
KAVL18512-E	N	N	N	Y#5	N	N	N	N	N
KAVL18513-E	N	N	N	Y#5	N	N	N	N	N
KAVL18514-E	N	N	N	Y#5	N	N	N	N	N
KAVL18515-E	N	N	N	Y#5	N	N	N	N	N
KAVL18516-E	N	N	N	Y#5	N	N	N	N	N
KAVL18517-E	N	N	N	Y#5	N	N	N	N	N
KAVL18518-E	N	N	N	Y#5	N	N	N	N	N
KAVL18519-E	N	N	Y	N	N	N	N	N	N
KAVL18600-E	N	N	N	N	N	N	Y	N	N
KAVL18601-I	N	N	N	N	N	Y	N	N	N
KAVL18602-I	N	N	N	N	N	Y	N	N	N
KAVL18603-I	N	N	N	N	N	Y	N	N	N
KAVL18604-I	N	N	N	N	N	Y	N	N	N
KAVL18605-I	N	N	N	N	N	Y	N	N	N
KAVL18606-I	N	N	N	N	N	Y	N	N	N
KAVL18607-I	N	N	N	N	N	Y	N	N	N
KAVL18608-I	N	N	N	N	N	Y	N	N	N
KAVL18609-I	N	N	N	N	N	Y	N	N	N
KAVL18610-I	N	N	N	N	N	Y	N	N	N
KAVL18611-I	N	N	N	N	N	Y	N	N	N

Message ID	Output destination								
	syslog	Windows event log	Common message log	Standard output	Standard error output	Agent log		JP1 system event#1	Agent event#2
						Normal log	Error log		
KAVL18612-I	N	N	N	N	N	Y	N	N	N
KAVL18613-W	N	N	N	N	N	N	Y	N	N
KAVL18614-E	N	N	N	N	N	N	Y	N	N
KAVL18615-W	N	N	N	N	N	N	Y	N	N
KAVL18616-E	N	N	N	N	N	N	Y	N	N
KAVL18617-E	N	N	N	N	N	N	Y	N	N
KAVL18618-E	N	N	N	N	N	N	Y	N	N
KAVL18619-W	N	N	N	N	N	N	Y	N	N
KAVL18620-W	N	N	N	N	N	N	Y	N	N
KAVL18621-E	N	N	N	N	N	N	Y	N	N
KAVL18622-E	N	N	N	N	N	N	Y	N	N
KAVL18623-W	N	N	N	N	N	N	Y	N	N
KAVL18624-W	N	N	N	N	N	N	Y	N	N
KAVL18625-E	N	N	N	N	N	N	Y	N	N
KAVL18629-I	N	N	Y	N	N	N	N	N	N
KAVL18630-W	N	N	Y	N	N	N	N	N	N
KAVL18631-E	N	N	N	N	N	N	Y	N	N
KAVL18632-W	N	N	N	N	N	N	Y	N	N
KAVL18633-W	N	N	Y	N	N	N	Y	N	N
KAVL18634-W	N	N	N	N	N	N	Y	N	N
KAVL18635-I	N	N	N	N	N	Y	N	N	N
KAVL18636-I	N	N	N	N	N	Y	N	N	N
KAVL18638-W	N	N	N	N	N	N	Y	N	N
KAVL18639-E	N	N	Y	N	N	N	Y	N	N

#1

JP1 system events are the events to notify JP1/IM of status change of the agent. For details about JP1 system events, see the chapter on how to coordinate Performance Management programs and JP1/IM programs and conduct operation monitoring in the *JP1/Performance Management User's Guide*.

Table 6-2 shows the prerequisite programs to issue JP1 system events.

Table 6–2: Prerequisite programs to issue JP1 system events

Hosts	Prerequisite program	Version
PFM - Manager host	PFM - Manager	09-00 or later
PFM - Web Console host	PFM - Web Console	08-00 or later

Hosts	Prerequisite program	Version
PFM - RM host	PFM - RM for Oracle	09-00 or later
	PFM - Manager or PFM - Base	09-00 or later
	JP1/Base	08-50 or later

#2

Agent events are the events to notify PFM - Manager of status change of the agent. For details about agent events, see the chapter on displaying the events in the *JP1/Performance Management User's Guide*.

Table 6-3 shows the prerequisite programs to issue agent events.

Table 6–3: Prerequisite programs to issue agent events

Hosts	Prerequisite programs	Version
PFM - Manager host	PFM - Manager	09-00 or later
PFM - Web Console host	PFM - Web Console	08-00 or later
PFM - RM host	PFM - Manager or PFM - Base	09-00 or later

#3

This message is output during the execution of the `sp_rist.sql` script.

#4

This message is output during the execution of the `sp_rist.sql` or the `mk_rmus.sql` script.

#5

This message is output during the execution of the `mk_rmus.sql` script.

6.3 List of messages output to the Windows event log and syslog

This section lists the messages that PFM - RM for Oracle outputs to `syslog` and to the Windows event log.

When the OS is Windows, the Windows event log is displayed in the application log of the Event Viewer window.

Reference Note:

To open the Event Viewer window, from the Windows **Start** menu, choose **Administrative Tools** and then **Event Viewer**.

For an event issued by PFM - RM for Oracle, the identifier `PFM-RMOracle` is displayed in the **Source** column of the Event Viewer window.

When the OS is UNIX, the syslog information is output to the `syslog` file. For the installation location of the `syslog` file, see the syslog daemon configuration file (default path is `/etc/syslogd.conf`).

The following table lists the messages that PFM - RM for Oracle outputs to syslog and to the Windows event log.

Table 6–4: Messages output to syslog and to the Windows event log

Message ID	syslog		Windows event log	
	Facility	Level	Event ID	Type
KAVL18001-I	LOG_DAEMON	LOG_INFO	18001	Information
KAVL18002-E	LOG_DAEMON	LOG_ERR	18002	Error
KAVL18003-I	LOG_DAEMON	LOG_INFO	18003	Information
KAVL18004-E	LOG_DAEMON	LOG_ERR	18004	Error
KAVL18010-E	LOG_DAEMON	LOG_ERR	18010	Error
KAVL18011-E	LOG_DAEMON	LOG_ERR	18011	Error
KAVL18014-E	LOG_DAEMON	LOG_ERR	18014	Error
KAVL18015-E	LOG_DAEMON	LOG_ERR	18015	Error
KAVL18017-E	LOG_DAEMON	LOG_ERR	18017	Error
KAVL18018-E	LOG_DAEMON	LOG_ERR	18018	Error
KAVL18020-E	LOG_DAEMON	LOG_ERR	18020	Error
KAVL18021-E	LOG_DAEMON	LOG_ERR	18021	Error
KAVL18022-E	LOG_DAEMON	LOG_ERR	18022	Error
KAVL18023-E	LOG_DAEMON	LOG_ERR	18023	Error
KAVL18303-E	LOG_DAEMON	LOG_ERR	18303	Error
KAVL18304-E	LOG_DAEMON	LOG_ERR	18304	Error
KAVL18305-E	LOG_DAEMON	LOG_ERR	18305	Error
KAVL18402-E	LOG_DAEMON	LOG_ERR	18402	Error

6.4 Messages

This section explains the messages issued by PFM - RM for Oracle and the corresponding actions to be taken.

KAVL18001-I

```
Remote Monitor Collector has stopped. (host=host-name, service=host-
name<RMOracle>)
```

The Remote Monitor Collector service stopped normally.

(S)

Stops Remote Monitor Collector service processing.

KAVL18002-E

```
Remote Monitor Collector failed to start.
```

An attempt to start the Remote Monitor Collector service failed.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check the immediately preceding message that was issued to the common message log and take appropriate action.

KAVL18003-I

```
Remote Monitor Collector has started. (host=host-name, service=host-
name<RMOracle>)
```

Remote Monitor Collector service startup was completed.

(S)

Starts collecting performance data for the Remote Monitor Collector service.

KAVL18004-E

```
Remote Monitor Collector stopped abnormally.
```

The Remote Monitor Collector service stopped abnormally.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check the immediately preceding message that was output to the common message log and take appropriate action.

KAVL18009-W

```
The object to be monitored is not available. (host=host-name, service=host-
name<RMOracle>)
```

PFM - RM for Oracle was unable to establish connection with the Oracle Database to be monitored.

(S)

Continues Remote Monitor Collector service processing.

(O)

Check to see if Oracle Database is active. Also check for errors in the following information specified during instance environment setup:

- net_service_name
- oracle_home
- oracle_sid
- oracle_user
- oracle_passwd

KAVL18010-E

```
An attempt to read the initialization file failed.
```

An attempt to read the service startup initialization file failed during startup processing for the Remote Monitor Collector service.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check to see if the service startup initialization file (jpcagt.ini) is stored in either of the following directories:

- For Windows
  installation-folder\agt1\agent*instance-name*
- For UNIX
  /opt/jp1pc/agt1/agent/*instance-name*

If you do not find the service startup initialization file, copy the contents of the jpcagt.ini.mode file to the jpcagt.ini file. If the cause of the error is unknown, collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18011-E

```
Initialization of interprocess communication failed.
```

Preparations could not be made to enable communication between the Remote Monitor Collector service and the performance data collection program.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check the immediately preceding message that was output to the common message log and take appropriate action.

If there is no such message, collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18014-E

```
The [Agent | Collector] semaphore could not be obtained.
```

Semaphore acquisition failed.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check the kernel parameters for semaphores and specify valid information. For details about semaphore values, see *B. Kernel Parameters*.

KAVL18015-E

```
The Collector process could not start.
```

Startup of the performance data collection program failed.

(S)

Stops Remote Monitor Collector service processing.

(O)

Collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18017-E

```
The environment variable [environment-variable] could not be set.
```

PFM - RM for Oracle was unable to set the indicated environment variable.

(S)

Stops Remote Monitor Collector service processing.

(O)

Collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18018-E

```
An attempt to start the collector failed. (GetProgram=program-name)
```

Startup of the performance data collection program failed because of invalid database monitoring settings.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check to see if Oracle Database is active. Also check for errors in the following information specified during instance environment setup:

- `oracle_home`
- `oracle_sid`
- `oracle_user`

- oracle_passwd

KAVL18019-W

```
External command could not be called while collecting record-name.
(Command=command-line)
```

The indicated external command call failed.

(S)

Continues Remote Monitor Collector service processing.

(O)

Check that the OS and Oracle are running normally.

Make sure that the command that is output to the command line can be executed.

KAVL18020-E

```
While executing function-name function called-function-name failed.
```

An error occurred during execution of the indicated function.

(S)

Stops Remote Monitor Collector service processing.

(O)

Perform the following:

- If Load Library() failed:

  Make sure that the value specified for oracle_home when the instance environment was set up is correct.
- For other cases:

  Collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18021-E

```
Error occurred by function function-name. (en=error-code, arg1=argument-1,
arg2=argument-2, arg3=argument-3)
```

An error occurred during execution of the indicated function.

(S)

Stops Remote Monitor Collector service processing.

(O)

Collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18022-E

```
Processing was interrupted by signal. (signal=signal-number)
```

Processing was interrupted by the indicated signal.

(S)

Stops Remote Monitor Collector service processing.

(O)

Collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18023-E

```
Remote Monitor Collector is going to stop because the error has occurred.
```

The Remote Monitor Collector service will be stopped because of an error.

(S)

Stops Remote Monitor Collector service processing.

(O)

Check the immediately preceding message that was output to the common message log and take appropriate action.

KAVL18301-W

```
At Remote Monitor Collector startup, the system could not connect to
Oracle. (rc=return-code)
```

An attempt to establish connection with the Oracle Database failed.

(S)

Continues Remote Monitor Collector service processing.

(O)

Take the appropriate action indicated in the message that follows this message.

KAVL18302-W

```
An OCI call failed because of function function-name. (rc=return-code,
errcode=error-number)
```

An OCI call resulted in an error during connection establishment with the Oracle Database.

(S)

Continues Remote Monitor Collector service processing.

(O)

Take one of the actions listed below on the basis of the Oracle error number:

- `errcode` value is `942`

  Check if you are attempting to collect a record that is not supported by the current configuration. Alternatively, make sure that the required system privileges have been granted to the Oracle account specified for `oracle_user`. When granting permissions as a role, grant the system privileges explicitly using `GRANT` *privileges*.

- `errcode` value is `1017` or `1031`

  An attempt to log in to the Oracle Database to be monitored failed because the user name or password was invalid. Check whether the user name and the password you specified during setup of the instance environment are correct. For details about how to check the instance environment, see *2.6.3 Updating an instance environment*.

- `errcode` value is `6550`

  You need to execute the `sp_rist.sql` script for the Oracle Database subject to data collection. For details about how to execute the script, see *2.1.4(3) Set up an instance environment* (for Windows), or *2.2.4(4) Set up an instance environment* (in UNIX).

  Note that you must execute the `sp_rist.sql` script after connecting to the Oracle Database with the account that was specified for `oracle_user` during setup of the instance environment. Check the account that was used to execute the `sp_rist.sql` script.

- `errcode` value is `1013`

  Performance data collection may be canceled due to the cancellation facility. In this case, check whether the `KAVL18636-I` message has been output to the common log of the agent log. To prevent collection data from being canceled, change the timeout value.

- `errcode` value is `12546`

  If another user (OTHER user) lacks execution permissions for the files in the Oracle home directory (same value as the `ORACLE_HOME` environment variable), a connection to the Oracle Database may be unable to be established. For details about checking the instance environment, see *2.6.3 Updating an instance environment*

- When any other value is displayed for `errcode`

  See the Oracle manual and take appropriate action.

KAVL18303-E

`An attempt to allocate memory failed. (RecordName=`*record-name*`, Size=`*size*`)`

Memory allocation for the indicated record failed.

(S)

Stops Remote Monitor Collector service processing.

(O)

Increase the amount of memory space available.

KAVL18304-E

`Semaphore is insufficient.`

Semaphore is insufficient.

(S)

Stops Remote Monitor Collector service processing.

(O)

Increase the semaphore value in the kernel parameter. For details about semaphore values, see *B. Kernel Parameters*.

KAVL18305-E

exception-name `exception s. (Detail:` *detailed-information*`)`

The indicated exception occurred.

(S)

Stops Remote Monitor Collector service processing.

(O)

Collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18306-W

```
An attempt to allocate memory failed. (RecordName=record-name, Size=size)
```

An attempt to allocate memory failed due to insufficient memory.

(S)

Continues Remote Monitor Collector service processing.

(O)

Increase the amount of memory space available.

KAVL18401-W

```
An attempt to collect a record failed. (RecordName=record-name)
```

Collection of the indicated record failed.

(S)

Continues Remote Monitor Collector service processing.

(O)

If this message is issued repeatedly, check the system environment settings for the program being monitored. If you cannot identify the cause of the error, collect maintenance information and contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18402-E

```
An unexpected abnormality occurred during the collection of records.
(RecordName=record-name)
```

Record collecting has been canceled due to an unexpected error.

(S)

Stops Remote Monitor Collector service processing.

(O)

Collect the maintenance data and then contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18501-E

```
This Oracle Version is not supported.
```

The Oracle Database version is not supported.

(S)

Cancels the script execution.

(O)

Make sure that the version of the Oracle Database to be monitored is supported. An unsupported version of the Oracle Database cannot be monitored.

KAVL18502-E

```
The permission for monitoring the Oracle Database is insufficient.
```

The privilege is insufficient for monitoring the Oracle Database.

(S)

Cancels the script execution.

(O)

If the user executing the script is not the one specified for `oracle_user`, have the user specified for `oracle_user` reexecute the script.

If the user executing the script is the one specified for `oracle_user`, set the privileges for referencing and executing SYS schema objects for this user and then reexecute the script.

KAVL18504-E

```
An unexpected error occurred.
```

An unexpected error has occurred.

(S)

Cancels the script execution.

(O)

Make sure that the privileges have been granted properly. If there is no problem with the privileges, collect the executed script and maintenance data and then contact the system administrator. For details on how to collect maintenance information, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

KAVL18505-I

```
The script ended normally.
```

The script terminated normally.

(S)

Terminates the script execution.

KAVL18506-E

```
Script processing will now stop because an error occurred.
```

Script processing will now stop because an error occurred.

(S)

Cancels the script execution.

(O)

Take the appropriate action indicated in the message that follows this message.

KAVL18507-E

```
The number of entered characters exceeded the maximum.
```

The number of characters in the entered string exceeded the maximum length. You can enter a character string of 30 or fewer bytes.

(S)

Cancels the script execution.

(O)

Check the entered value, and then reexecute the script.

KAVL18508-E

```
The entered value is invalid.
```

The entered value is invalid.

(S)

Cancels the script execution.

(O)

Check the entered value, and then reexecute the script. For details about character strings that can be specified for entered values, see *2.1.4(2) Table 2-4 Information required to create an Oracle account* (for Windows), or *2.2.4(3) Table 2-17 Information required to create an Oracle account* (for UNIX).

KAVL18509-E

```
A user with the same name already exists.
```

The same account name already exists in the database.

(S)

Cancels the script execution.

(O)

Check the account name, and then reexecute the script.

KAVL18510-E

```
The specified user name is invalid.
```

The specified account name is invalid. The specified account name contains a symbol that cannot be specified.

(S)

Cancels the script execution.

(O)

Check the account name, and then reexecute the script.

KAVL18511-E

```
The password is not specified or is invalid.
```

The password is not specified or is invalid.

(S)

Cancels the script execution.

(O)

If the password is not specified, specify it and then reexecute.

If the password is specified, the password contains a symbol that cannot be specified. Check the password, and then reexecute the script.

KAVL18512-E

```
The password did not meet the necessary complexity specifications.
```

The password does not meet the necessary complexity specifications.

(S)

Cancels the script execution.

(O)

The specified password does not meet the level of complexity required by Oracle. After asking the database administrator about the required complexity for passwords, check the password and then reexecute the script.

KAVL18513-E

```
The tablespace name is not specified.
```

The default tablespace name or default temporary tablespace name is not specified.

(S)

Cancels the script execution.

(O)

Specify the default tablespace name or default temporary tablespace name, and then reexecute the script.

KAVL18514-E

```
The specified tablespace name is invalid.
```

The specified default tablespace name or default temporary tablespace name is invalid. The specified tablespace name contains a symbol that cannot be specified.

(S)

Cancels the script execution.

(O)

Check the default tablespace name or default temporary tablespace name, and then reexecute the script.

KAVL18515-E

```
The specified tablespace does not exist.
```

The specified default tablespace or default temporary tablespace does not exist in the database.

(S)

Cancels the script execution.

(O)

Check the default tablespace or default temporary tablespace, and then reexecute the script.

KAVL18516-E

```
The specified tablespace cannot be used as the default tablespace.
```

The specified tablespace name cannot be used as the default tablespace, such as a temporary tablespace.

(S)

Cancels the script execution.

(O)

Check the specification of the default tablespace name, and then reexecute the script.

KAVL18517-E

```
The specified tablespace cannot be used as the default temporary
tablespace.
```

The specified temporary tablespace name cannot be used as the default temporary tablespace, such as an UNDO tablespace.

(S)

Cancels the script execution.

(O)

Check the specification of the default temporary tablespace name, and then reexecute the script.

KAVL18518-E

```
The permission for executing the script is insufficient.
```

The permission is insufficient for executing the script.

(S)

Cancels the script execution.

(O)

Check whether the CREATE USER system privilege and GRANT ANY PRIVILEGE system privilege have been assigned to the Oracle account used for executing the script.

If the account used for executing the script does not have the necessary privileges, assign the necessary privileges or use another account that has sufficient privileges, and then reexecute the script.

KAVL18519-E

```
Failed to output to Agent log. OS-function failed. Error code = error-code.
```

An attempt to output an Agent log has failed. The indicated OS function failed due to the error indicated by *error-code*.

(S)

Continues Remote Monitor Collector processing. Subsequent Agent logs will not be collected until the error has been corrected.

(O)

Check the output destination path of the Agent log and access permissions.

KAVL18600-E

```
An error occurred in OS function function-name. (rc=error-code)
```

An error occurred during execution of the function indicated by *function-name*. *error-code* is a value returned by the system call.

(S)

Continues Remote Monitor Collector processing.

(O)

Make sure that the OS has sufficient resources and that no errors have occurred in the OS. If this message is issued repeatedly, check the system environment settings for the program being monitored. If you cannot identify the cause of the error, collect maintenance information and contact the system administrator. For details about how to collect maintenance information, see the chapter in the *JP1/Performance Management User's Guide* that describes troubleshooting.

KAVL18601-I

```
Agent : Started : Collecting records.
```

Agent has started collecting records.

(S)

Continues Remote Monitor Collector processing.

KAVL18602-I

```
Agent : Started : Sending a request to the collector. (process-ID)
```

Agent has started sending a processing request to the collector with the ID indicated by *process-ID*.

(S)

Continues Remote Monitor Collector processing.

KAVL18603-I

```
Collector : Started : Receive a request.
```

The collector process has started receiving a processing request from Agent.

(S)

Continues Remote Monitor Collector processing.

KAVL18604-I

```
Agent : Ended : Sending a request to the collector. (process-ID)
```

Agent has finished sending a processing request to the collector with the ID indicated by *process-ID*. Agent will now wait for the results.

(S)

Continues Remote Monitor Collector processing.

KAVL18605-I

```
Collector : Ended : Receive a request. (record-name)
```

The collector process has finished receiving a processing request for the *record-name* from Agent.

(S)

Continues Remote Monitor Collector processing.

KAVL18606-I

```
Agent : Waiting for the results.
```

Agent is waiting for the results from the collector process.

(S)

Continues Remote Monitor Collector processing.

KAVL18607-I

```
Collector : Started : Sending the results.
```

The collector process has finished accessing the Oracle database, and has started sending the results to Agent.

(S)

Continues Remote Monitor Collector processing.

KAVL18608-I

```
Agent : Received the results.
```

Agent has finished receiving the results from the collector process.

(S)

Continues Remote Monitor Collector processing.

KAVL18609-I

```
Collector : Ended : Sending the results.
```

The collector process has finished sending the results to Agent.

(S)

Continues Remote Monitor Collector processing.

KAVL18610-I

```
Agent : Started : Storing the results to the Store DB. (record-name)
count=number-of-records
```

Agent has started storing the records indicated by *record-name* in the Store database. The number of records to be stored is indicated by *number-of-records*.

(S)

Continues Remote Monitor Collector processing.

KAVL18611-I

```
Agent : Ended : Storing the results to the Store DB. (record-name)
```

Agent has finished storing the records indicated by *record-name* in the Store database.

(S)

Continues Remote Monitor Collector processing.

KAVL18612-I

```
Agent : Ended : Collecting records.
```

Agent has finished collecting records.

(S)

Continues Remote Monitor Collector processing.

KAVL18613-W

```
The object to be monitored is not available. (host=host-name, service=host-
name<RMOracle>)
```

PFM - RM for Oracle cannot connect to the Oracle server to be monitored.

(S)

Continues Remote Monitor Collector processing.

(O)

Check whether the Oracle Database has started. Also make sure that the following items were correctly specified during setup of the instance environment:

- oracle_sid
- oracle_home
- oracle_user
- oracle_passwd

KAVL18614-E

```
The environment variable [environment-variable] could not be set.
```

PFM - RM for Oracle was unable to set the indicated environment variable.

(S)

Stops Remote Monitor Collector processing.

(O)

Collect maintenance information and contact the system administrator.

KAVL18615-W

```
External command could not be called while collecting record-name.
(Command=command-line)
```

The indicated external command call failed.

(S)

Continues Remote Monitor Collector processing.

(O)

Check that the OS and Oracle are running normally.

Make sure that the command that is output to the command line can be executed.

KAVL18616-E

```
While executing function-name function called-function-name failed.
```

An error occurred during execution of the function indicated by *function-name*.

(S)

Stops Remote Monitor Collector processing.

(O)

Collect maintenance information and contact the system administrator.

KAVL18617-E

```
Error occurred by function function-name. (en=error-code, arg1=argument-1,
arg2=argument-2, arg3=argument-3)
```

An error occurred during execution of the function indicated by *function-name*.

(S)

Stops Remote Monitor Collector processing.

(O)

Collect maintenance information and contact the system administrator.

KAVL18618-E

```
Processing was interrupted by signal. (signal=signal-number)
```

Processing was interrupted by the indicated signal.

(S)

Stops Remote Monitor Collector processing.

(O)

Collect maintenance information and contact the system administrator.

KAVL18619-W

```
At Remote Monitor Collector startup, the system could not connect to
Oracle. (rc=return-code)
```

Connection establishment with the Oracle server failed.

(S)

Continues Remote Monitor Collector processing.

(O)

Take the appropriate action indicated in the message that follows this message.

KAVL18620-W

```
An OCI call failed because of function function-name. (rc=return-code,
errcode=error-number)
```

OCI call resulted in an error during connection establishment with the Oracle server.

(S)

Continues Remote Monitor Collector processing.

(O)

Take one of the actions listed below on the basis of the Oracle error number:

- `errcode` value is `942`

  Make sure that collection is not being performed for records that cannot be collected under the current configuration. Alternatively, make sure that the required system privileges have been granted to the Oracle account specified for `oracle_user`. When granting privileges as a role, grant the system privileges explicitly using `GRANT` *privileges*.

- `errcode` value is `6550`

  The `sp_rist.sql` needs to be executed on the collection target Oracle Database. For details about how to execute this script, *2.1.4(3) Set up an instance environment* (in Windows), or *2.2.4(4) Set up an instance environment* (in UNIX).

  Note that you must execute the `sp_rist.sql` script after connecting to the Oracle Database with the account that was specified for `oracle_user` during setup of the instance environment. Check the account that was used to execute the `sp_rist.sql` script.

- `errcode` value is `1013`

  Performance data collection may be canceled due to the cancellation facility. In this case, check whether the `KAVL18636-I` message has been output to the common log of the agent log. To prevent collection data from being canceled, change the timeout value.

- `errcode` value is `12546`

  If another user (OTHER user) lacks execution permissions for the files in the Oracle home directory (same value as the `ORACLE_HOME` environment variable), a connection to the Oracle Database may be unable to be established. For details about checking the instance environment, see *2.6.3 Updating an instance environment*

- `errcode` value is another value

  For details about what to do, see the Oracle documentation.

KAVL18621-E

```
An attempt to allocate memory failed. (RecordName=record-name, Size=size)
```

Memory allocation for the indicated record failed.

(S)

Stops Remote Monitor Collector processing.

(O)

Increase the amount of memory space available.

KAVL18622-E

```
exception-name exception raised. (Detail: detailed-information)
```

The indicated exception occurred.

(S)

Stops Remote Monitor Collector processing.

(O)

Collect maintenance information and contact the system administrator.

KAVL18623-W

```
An attempt to allocate memory failed. (RecordName=record-name, Size=size)
```

Memory allocation for the indicated record failed.

(S)

Continues Remote Monitor Collector processing.

(O)

Increase the amount of memory space available.

KAVL18624-W

```
An attempt to collect a record failed. (RecordName=record-name)
```

An attempt to collect the record indicated by *record-name* failed.

(S)

Continues Remote Monitor Collector processing.

(O)

If this message appears repeatedly, check the settings of the system environment being monitored. If you cannot identify the cause of the error, collect maintenance information and contact the system administrator.

KAVL18625-E

```
An unexpected abnormality occurred during the collection of records.
(RecordName=record-name)
```

Record collecting has been canceled due to an unexpected error.

(S)

Stops Remote Monitor Collector processing.

(O)

Collect maintenance information and contact the system administrator.

KAVL18629-I

```
Agent log. path = Agent-log-output-folder-path
```

The system has recorded that the path for Agent log output is the folder indicated by *Agent-log-output-folder-path*.

(S)

Continues Remote Monitor Collector processing.

KAVL18630-W

```
Agent property property-name is outside injustice or the range. (Range: range-value)
```

An invalid value or a value outside the valid range is specified for a property of the Remote Monitor Collector service.

(S)

Invalidates the specified value and continues Remote Monitor Collector processing. The value of the indicated property remains unchanged. If a value from 1 to 9 is specified for the `TIMEOUT` property, it is replaced with `10`.

(O)

Check the specified value. If there is a problem with the specified value, specify an appropriate value.

KAVL18631-E

```
An error occurred: error-details
```

An error occurred during Remote Monitor Collector service processing.

(S)

Stops Remote Monitor Collector processing.

(O)

Make sure that the OS has sufficient resources and that no errors have occurred in the OS. If this message is issued repeatedly, check the system environment settings for the program being monitored. If you cannot identify the cause of the error, collect maintenance information and contact the system administrator. For details about how to collect maintenance information, see the chapter in the *JP1/Performance Management User's Guide* that describes troubleshooting.

KAVL18632-W

```
A warning-level error occurred: warning-error-details
```

A warning error occurred during Remote Monitor Collector service processing.

(S)

Continues Remote Monitor Collector processing.

(O)

Make sure that:

- The OS has sufficient resources.
- No errors have occurred in the OS.
- The system environment to be monitored is set up correctly.

KAVL18633-W

```
Can't get data from Oracle.
```

Information about Oracle could not be collected.

(S)

The system cannot connect to Oracle.

(O)

Check whether Oracle is running normally.

Also check the information that was specified during setup of the instance.

KAVL18634-W

```
Getting record error(record-name). This record is only in drilldown reports.
```

The record indicated by *record-name* could not be obtained. This record can be obtained only in drilldown reports.

(S)

Continues Remote Monitor Collector processing.

(O)

Set a drilldown for records that have the ODBC key field specific to this record. For details about drilldown reports, see the chapter on creating reports used for operation analysis in the *JP1/Performance Management User's Guide*.

KAVL18635-I

```
Agent : Elapsed time required-time sec. (record-name)
```

The number of seconds required for collecting the record indicated in *record-name* will be recorded.

(S)

Continues Remote Monitor Collector processing.

KAVL18636-I

```
The cancellation of the record collection (record-name) by the time-out was
accepted.
```

A collection cancellation was accepted due to a timeout for the record indicated by *record-name*.

(S)

Continues Remote Monitor Collector processing.

KAVL18638-W

```
The mismatch of ORACLE_SID was detected. (SID of the monitoring target Oracle Database)
```

The oracle_sid you specified when you set up the instance environment is different from the SID of the monitoring target Oracle Database.

(S)

Continues Remote Monitor Collector processing.

(O)

Check whether the `oracle_sid` you specified when you set up the instance environment is different from the SID of the monitoring target Oracle Database.

Alternatively, check whether the `net_service_name` you specified when you set up the instance environment is correct.

KAVL18639-E

```
The target is not set.
```

The monitoring target is not set.

(S)

Continues Remote Monitor Collector processing.

(O)

Check whether the instance of PFM - RM for Oracle is associated with the monitoring target. After you associate the instance with the monitoring target, start PFM - RM for Oracle.

7 Error Handling Procedures

This chapter describes how to troubleshoot problems in Performance Management operation, focusing mainly on problems that occur in PFM - RM for Oracle. For details about how to deal with issues affecting the Performance Management system as a whole, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

7.1 When an error occurs

If an error occurs in Performance Management, follow the steps below.

Check events

Check the following:

- What events occur when the problem is encountered
- The content of messages (if output)
- Log information such as the common message log

For details about the causes of messages and the action to take, see *6. Messages*. For details about the logs that are output by Performance Management, see *7.3 Log information*.

Collect data

You need to collect data to determine the cause of the problem. See *7.4 Required troubleshooting information* and *7.5 Collecting troubleshooting information* to collect the necessary information.

Investigate the problem

Identify the cause of the problem based on the collected data. Isolate the problem or all the areas affected by the problem.

7.2 Troubleshooting procedures

This section describes how to troubleshoot Performance Management. If a problem occurs while you are using Performance Management, first check for any of the events described in this section.

The following table shows the main types of problems that may occur in Performance Management.

Table 7–1: Problems that occur in Performance Management

Category	Description	Reference
Problems relating to the start and setup of services	• A Performance Management program service does not start. • The Oracle Database does not stop.	*7.2.1*
	• There is a delay from the time the start request is issued until the service starts. • Communication fails when another program starts a service immediately after a Performance Management program service is stopped. • The following message is output and the Master Store or Remote Monitor Store service stops: `The disk capacity is insufficient.` • The PFM - RM Remote Monitor Collector service does not start.	See the chapter that explains troubleshooting in the *JP1/Performance Management User's Guide*.
Problems relating to command execution	• The name of an inactive service is output when you execute the `jpctool service list` command. • The data output by the `jpctool db dump` command is not the Store data you specified.	
Problems relating to report definitions	• During a certain period, the collected data is not shown in the historical report.	
Problems relating to alarm definitions	• A program defined in an action does not operate correctly. • Alarm events are not displayed. • Although the alarm threshold has been exceeded, the color of the alarm icon shown in the Alarm Status window of the Agents tree remains green.	
Problems relating to collection and management of performance data	• The PFM - RM for Oracle Store database remains large despite setting a short data retention period. • The following message is output to the common message log: `Illegal data was detected in the Store database.`	
	• Performance data is not collected after PFM - RM for Oracle startup.	*7.2.2*

7.2.1 Problems relating to the start and setup of services

This subsection describes how to correct errors related to the start and setup of services. For details about how to correct other types of errors, see the *JP1/Performance Management User's Guide*.

(1) Performance Management program service does not start

Potential causes and actions to take are as follows:

- 64-bit Oracle Client is not installed

For the Remote Monitor Collector service to start, 64-bit Oracle Client must be installed. Install 64-bit Oracle Client on the PFM - RM host.

- The Oracle Database has not started

  The Remote Monitor Collector service may not start, depending on whether the Oracle Database is running. Make sure that the Remote Monitor Collector service is started after the Oracle Database.

- An Oracle service is running under an account other than the local system account

  If any Oracle service is running under an account other than the local system account, an error occurs on Oracle and the Remote Monitor Collector service may not start.

- The instance environment settings are specified incorrectly

  The Remote Monitor Collector service cannot start if any of the following is specified incorrectly during instance environment setup:

  - `oracle_sid`
  - `oracle_home`
  - `oracle_user`
  - `oracle_passwd`

  Execute the `jpcconf agent setup` command to specify the correct settings. For details about the `jpcconf agent setup` command, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

(2) The Oracle Database does not stop

When you attempt to stop the monitored Oracle Database before stopping PFM - RM for Oracle, a normal shutdown may not stop the Oracle Database. In this case, use an immediate shutdown to stop the Oracle Database.

7.2.2 Problems relating to the collection and management of performance data

This subsection describes how to correct errors related to the collection and management of performance data in Performance Management. For details about how to correct other types of errors, see the *JP1/Performance Management User's Guide*.

(1) Performance data is not collected after PFM - RM for Oracle startup

Take the following action:

- Check the startup status of the monitored host.
- If PFM - RM for Oracle and the monitoring target communicate across a firewall, check the port number to route traffic through the firewall.
- Check the startup status of the Oracle Database and start it if it is inactive.
- Check the monitoring target settings.
- Execute the `jpcconf target setup` command to specify the correct value for each item. For the detail about `jpcconf target setup` command, see the chapter on the commands in the manual *JP1/Performance Management Reference*.
- Check the instance environment settings.

Execute the `jpcconf agent setup` command to specify the correct value for each item. For details about the `jpcconf agent setup` command, see the chapter on the commands in the manual *JP1/Performance Management Reference*.

7.2.3 Other problems

Check what events occur when the problem is encountered. If a message has been output, check the contents of the message. For details about the log information output by Performance Management, see *7.3 Log information*.

If the actions described in chapter on troubleshooting in the *JP1/Performance User's Guide* and sections *7.2.1 Problems relating to the start and setup of services* through *7.2.2 Problems relating to the collection and management of performance data* do not resolve the problem, or the problem arises in a different scenario, collect information to determine the cause of the problem, and contact the system administrator.

For details about the data you need to collect and how to collect it, see *7.4 Required troubleshooting information* and *7.5 Collecting troubleshooting information*.

7.3 Log information

You can determine what action to take when a problem occurs in Performance Management by reviewing the log information. Five types of log information are output during Performance Management operation:

- System log
- Common message log
- Operation status log
- Trace log
- Agent log

This section explains each type of log information.

7.3.1 Types of log information

(1) System log

A system log contains log information that describes the system status and reports errors in the system. System logs are output to the following log files:

- In Windows
  Event log file
- In UNIX
  syslog file

For details about the output format, see the chapter on log information in the manual *JP1/Performance Management Reference*.

Cautionary note on logical host use

In addition to the system log for Performance Management, logs for the cluster software are required. Use these logs to check the instructions issued to Performance Management by the cluster software.

(2) Common message log

The common message log contains log information that describes the system status and reports errors in the system. The common message log contains information that is more detailed than that in the system log. For details about the output file name and file size of the common message log, see *7.3.2 List of log files and directories*. For details about the output format of the common message log, see the chapter on log information in the manual *JP1/Performance Management Reference*.

Cautionary note on logical host use

When Performance Management is set up for logical host use, the common message log is output to a shared disk and inherited at failover. This means that the messages are recorded in the same log file before and after failover.

(3) Operation status log

The operation status log contains log information output by PFM - Web Console. For details about the output file name and file size of the operation status log, see the chapter on troubleshooting in the *JP1/Performance User's Guide*. For

details about the output format of the operation status log, see the chapter on log information in the manual *JP1/Performance Management Reference*.

(4) Trace log

A trace log contains log information that helps you investigate the status of the system leading up to the problem, and measure the processing time for each process.

Trace logs are output to the log files belonging to each Performance Management service.

Cautionary note on logical host use:

When Performance Management is set up for logical host use, trace logs are output to the shared disk and inherited at failover. This means that the messages are recorded in the same log file before and after failover.

(5) Agent log

An agent log that is output by PFM - RM for Oracle contains log information about the processing executed to acquire records. If a problem occurs, collect agent logs to acquire detailed information about the processing.

Agent logs are output to separate files according to its type: normal log or error log. For details about output destinations, see *7.3.2(3) Agent log*.

Format:

The format of an output agent log is as follows:

```
yyyy/mm/dd hh:mm:ss.sss agt1 PID inf1 inf2 inf3 MessageID Message
```

The following explains the output items.

Table 7–2: Agent log items

Item	Description
yyyy/mm/dd	Date on which the log was output (*yyyy*: year, *mm*: month, and *dd*: day)
hh:mm:ss.sss	Local time at which the log was output (*hh*: hour, *mm*: minute, *ss*: second, and *sss*: millisecond)
agt1	Name of the process that output the log (*agt1* is the process name of PFM - RM for Oracle).
PID	Output process ID
inf1 to inf3	Maintenance information
MessageID	Message ID#
Message	Message#

#

For details about the message contents, see *6. Messages*.

Notes

- Do not change the time set on the RM host or the update time of an agent log file. Since information about the last update date and time is used to output agent logs, the agent logs may not be output correctly if these times are changed.
- When Performance Management is set up for logical host use, specify a path on the shared disk so that the agent log output destination is the same for both the executing node and the standby node.

7.3.2 List of log files and directories

This subsection describes the log information output by a Performance Management program. Performance Management outputs the following log information:

For details about the output file name and file size of the operation status log, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

(1) Common message log

For details about the common message log, see the chapter that describes details on log information in the *JP1/Performance Management User's Guide*.

(2) Trace log

This subsection describes the trace logs output by Performance Management. The following tables list the name of the service or command that outputs trace logs for PFM - RM for Oracle and the directory where the logs are stored, for each OS.

Table 7–3: Trace log storage folders (in Windows)

Type of log	Output source	Folder name
Trace log	Action Handler service	*installation-folder*\bin\action\log\
	Performance Management command	*installation-folder*\tools\log\
	Remote Monitor Collector service	*installation-folder*\agt1\agent*instance-name*\log\
	Remote Monitor Store service	*installation-folder*\agt1\store*instance-name*\log\
	Status Server service	*installation-folder*\bin\statsvr\log\
Trace log (logical host use)	Action Handler service	*environment-directory*#\jp1pc\bin\action\log\
	Performance Management command	*environment-directory*#\jp1pc\tools\log\
	Remote Monitor Collector service	*environment-directory*#\jp1pc\agt1\agent*instance-name*\log\
	Remote Monitor Store service	*environment-directory*#\jp1pc\agt1\store*instance-name*\log\

#

The environment directory is the directory you specified on the shared disk when creating the logical host.

Table 7–4: Trace log storage directories (in UNIX)

Type of log	Output source	Directory name
Trace log	Action Handler service	/opt/jp1pc/bin/action/log/
	Performance Management command	/opt/jp1pc/tools/log/
	Remote Monitor Collector service	/opt/jp1pc/agt1/agent/*instance-name*/log/

Type of log	Output source	Directory name
Trace log	Remote Monitor Store service	/opt/jp1pc/agt1/store/*instance-name*/log/
	Status Server service	/opt/jp1pc/bin/statsvr/log/
Trace log (logical host use)	Action Handler service	*environment-directory*#/jp1pc/bin/action/log/
	Performance Management command	*environment-directory*#/jp1pc/tools/log/
	Remote Monitor Collector service	*environment-directory*#/jp1pc/agt1/agent/*instance-name*/log/
	Remote Monitor Store service	*environment-directory*#/jp1pc/agt1/store/*instance-name*/log/

#

The environment directory is the directory you specified on the shared disk when creating the logical host.

(3) Agent log

This subsection describes the agent logs output by Performance Management. The following tables list the name of the service or command that outputs agent logs for PFM - RM for Oracle, the name of the log file, and the disk space used by each file.

Table 7–5: Agent log files

Type of log	Output source	Default output destination#1	File name	Default Disk usage#1 (MB)
Normal log	PFM - RM for Oracle	In Windows *installation-folder*\agt1\agent*instance-name*\log\ In UNIX /opt/jp1pc/agt1/agent/*instance-name*/log/	agt1inf{01|02}#2	16
Error log			agt1err{01|02}#2	
Normal log (logical host use)	PFM - RM for Oracle	In Windows *environment-directory*#3\jp1pc\agt1\agent*instance-name*\log\ In UNIX *environment-directory*#3/jp1pc/agt1/agent/*instance-name*/log/	agt1inf{01|02}#2	16
Error log (logical host use)			agt1err{01|02}#2	

#1

You can use the following methods to check and change the output destination of agent logs and the maximum file size:

- jpcconf inst setup command
- RM Configuration property in the PFM - Web Console window

For details about how to use the jpcconf inst setup command to change the settings, see *2.6.3 Updating an instance environment* .

#2

Agent logs are output using two sequential files. The file names are suffixed with 01 or 02, which have the following meanings:

- `01`: Current file
- `02`: Backup file

For details about sequential files, see *When using sequential files (jpclog)* in *(1) Common message log*.

#3

The environment directory is on the shared disk specified when the logical host was created.

7.4 Required troubleshooting information

If the actions described in *7.2 Troubleshooting procedures* do not resolve the problem, collect information to determine the cause of the problem, and then contact the system administrator. This section describes the information you need to collect when an error occurs.

Performance Management provides the `jpcras` command to collect the required information in a batch. Use this command to collect information about PFM - RM for Oracle. In the following tables, the information that can be collected by the `jpcras` command is indicated as such.

Note:

The data collected by the `jpcras` command depends on the options specified when the command was executed. For details about the command options and the data that can be collected, see the chapter on commands in the manual *JP1/Performance Management Reference*.

Cautionary notes on logical host use:

- When running in a logical host environment, Performance Management outputs logs to a shared disk. If the shared disk is online (Windows) or mounted (UNIX) when you execute the `jpcras` command, the logs on the shared disk are also collected.
- To investigate the cause of a problem that occurred during failover, you will need information from before and after the failover. For this reason, you must collect information from both the executing node and the standby node.
- When Performance Management is running in a logical host environment, you must also collect information for the cluster software. Because Performance Management is started and stopped by the cluster software in a logical host environment, collecting this information allows you to check the behavior of Performance Management against the behavior of the cluster software.

7.4.1 In Windows

(1) Log information about the OS

Collect the information about the OS. The following table lists the information about the OS:

Table 7–6: Information about the OS

Type of information	Details	Default file name	Collected by jpcras command
System log	Windows event log	--	Y
Process information	List of processes	--	Y
System file	`hosts` file	*system-folder*`\system32\drivers\etc\hosts`	Y
	`services` file	*system-folder*`\system32\drivers\etc\services`	Y
OS information	System information	--	Y
	Network status	--	Y
	Host name	--	Y
	Windows firewall information	--	Y

Type of information	Details	Default file name	Collected by jpcras command
Dump information	Problem Reports and Solutions log file	*user-mode-process-dump-output-folder**program-name.process-ID.dmp* Example: `jpcagt1.exe.2420.dmp`	N

Legend:

Y: Can be collected

N: Cannot be collected

--: Not applicable

(2) Performance Management information

Collect the log information about Performance Management. If the problem relates to a network connection, also collect information from the machine that is the connection target. The following table lists the log information about the Performance Management:

Table 7–7: Log information about Performance Management

Type of information	Details	Default file name	Collected by jpcras command
Common message log	Message log output by Performance Management (sequential files)	*installation-folder*\log\jpclog{01|02}[#1]	Y
	Message log output by Performance Management (wraparound files)	*installation-folder*\log\jpclogw{01|02}[#1]	Y
Configuration information	Configuration information files	--	Y
	Output of `jpctool service list` command	--	Y
Version information	Product versions	--	Y
	Log information	--	Y
Database information	Remote Monitor Store service	*installation-folder*\agt1\store*instance-name*\stpd The following files under the *installation-folder*\agt1\store*instance-name*\stpi folder: • *.DB • *.IDX	Y
Trace log	Trace information for Performance Management services	--[#2]	Y
Agent log	Normal log for processing related to acquisition of PFM - RM for Oracle records	*installation-folder*\agt1\agent*instance-name*\log\agt1inf{01|02}[#3]	Y[#4]
	Error log for processing related to acquisition of	*installation-folder*\agt1\agent*instance-name*\log\agt1err{01|02}[#3]	Y[#4]

Type of information	Details	Default file name	Collected by jpcras command
Agent log	PFM - RM for Oracle records	*installation-folder*\agt1\agent*instance-name*\log\agt1err{01|02}[#3]	Y[#4]
Install log[#5]	Message logs from installation (in Windows Server 2008 or Windows Server 2012)	The following files under the *system-folder* \TEMP\HCDINST folder: • HCDMAIN.LOG • HCDINST.LOG • *product-model-name*.LOG	N

Legend:

Y: Can be collected

N: Cannot be collected

--: Not applicable

#1

For details about the output format of the log files, see the chapter on detecting errors in Performance Management in the *JP1/Performance Management User's Guide*.

#2

For details about the storage folders for trace logs, see *7.3.2(2) Trace log*.

#3

For details about the output format of an agent log and how to change the storage folder, see *7.3.2(3) Agent log*.

#4

The jpcras command collects agent log information only from the currently specified output destination folder. If you change the output destination folder for agent logs, you need to manually collect data from the agent log files that were output before the change.

#5

Collect this information if installation failed.

(3) Operation information

Collect the following information about the operation that was being performed when the problem occurred:

- Details of the operation
- Time when the error occurred
- Machine configuration (version of each OS, host name, configuration of PFM - Manager and PFM - RM for Oracle)
- Whether the error is reproducible
- Name of any Performance Management user who logged in from PFM - Web Console

(4) Error information on the screen

Collect hard copies of the following:

- Windows on the screen when the application error occurred
- The error dialog boxes (Also copy the detailed information if a dialog box contains a **Details** button.)
- Information in the Command Prompt window or [Administrator Console] window when an error occurs during command execution

(5) User mode process dump

If a Performance Management process stops due to an application error, obtain a user mode process dump.

(6) Collecting problem reports

If a Performance Management process stops due to an application error, obtain a problem report.

(7) Information about performance data

Collect the following information about performance data. If a problem occurred during network connection, you must also collect files located on the machine, command results, and registry information.

The following table shows information about performance data that is specially collected by PFM - RM for Oracle in an environment in which PFM - RM for Oracle is installed.

Table 7–8: Information about performance data

Type of information	Details	Default file name	Collected by jpcras command
Error information during Oracle connection[#1]	Error code when an error occurs for the Oracle connection	*installation-folder*\agt1\agent*instance-name*\pdia_xxxxx_status.db[#2]	Y
Internal maintenance information	Log file for OCI functions	*installation-folder*\agt1\agent*instance-name*\ocilog.txt	Y

Legend:

Y: Can be collected

#1

This file may be created when an error occurs during an Oracle connection.

#2

xxxxx is replaced with any string.

(8) Other information

Also collect the following information:

- Arguments specified in the command when an error occurs during command execution.
- Windows system information
- Windows system and application logs (of Windows event logs)

7.4.2 In UNIX

(1) Log information about the OS

Collect the information about the OS. The following table lists the information about the OS:

Table 7–9: Information about the OS

Type of information	Details	Default file name	Collected by jpcras command
System log	syslog	/var/log/messages	Y#
Process information	List of processes	--	Y
System file	hosts file	/etc/hosts	Y
	services file	/etc/services	Y
OS information	Patch information	--	Y
	Kernel information	--	Y
	Version information	--	Y
	Network status	--	Y
	Environment variable	--	Y
	Host name	--	Y
Dump information	core file	--	Y

Legend:

Y: Can be collected

--: Not applicable

#

This information will not be collected by the jpcras command if it is output to a path or file other than the default. In this case, manually collect the information.

(2) Information about Performance Management

Collect the information about Performance Management. If the problem relates to a network connection, also collect information from the machine that is the connection target.

The following table lists the information about Performance Management:

Table 7–10: Information about Performance Management

Type of information	Details	Default file name	Collected by jpcras command
Common message log	Message log output by Performance Management (sequential files)	/opt/jp1pc/log/jpclog{01|02}#1	Y
	Performance Management (wraparound files)	/opt/jp1pc/log/jpclogw{01|02}#1	Y
Configuration information	Configuration information files	--	Y
	Output of jpcconf inst list command	--	Y
Version information	Product version	--	Y

Type of information	Details	Default file name	Collected by jpcras command
Version information	Log information	--	Y

Database information	Remote Monitor Store service	`/opt/jp1pc/agt1/store/`*instance-name*`/STPD`
		The following files under the `/opt/jp1pc/agt1/store/`*instance-name*`/STPI` directory:
		`*.DB`
		`*.IDX`
			Y

Trace log	Trace information for Performance Management services	--[#2]	Y
Agent log	Normal log for processing related to acquisition of PFM - RM for Oracle records	`/opt/jp1pc/agt1/agent/`*instance-name*`/log/agt1inf{01|02}`[#3]	Y[#4]
	Error log for processing related to acquisition of PFM - RM for Oracle records	`/opt/jp1pc/agt1/agent/`*instance-name*`/log/agt1err{01|02}`[#3]	Y[#4]
Install log[#5]	Standard log for Hitachi Program Product Installer	`/etc/.hitachi/.hitachi.log`	N

Legend:

Y: Can be collected

N: Cannot be collected

--: Not applicable

#1

For details about the output format of the log files, see the chapter on detecting errors in Performance Management in the *JP1/Performance Management User's Guide*.

#2

For details about the storage directories for trace logs, see *7.3.2 List of log files and directories*.

#3

For details about the output format of an agent log and how to change the storage folder, see *7.3.2 List of log files and directories*.

#4

The `jpcras` command collects agent log information only from the currently specified output destination folder. If you change the output destination folder for agent logs, you need to manually collect data from the agent log files that were output before the change.

#5

Collect this information if installation failed.

(3) Operation information

Collect the following information about the operation that was being performed when the problem occurred:

- Details of the operation

- Time when the error occurred
- Machine configuration (version of each OS, host name, configuration of PFM - Manager and PFM - RM for Oracle)
- Whether the error is reproducible
- Name of any Performance Management user who logged in from PFM - Web Console

(4) Error information

Collect the following error information:

- Messages output to the console when an error occurs during command execution

(5) Information about performance data

Collect the following information about performance data. If a problem occurred during network connection, you must also collect files located on the machine, command results, and registry information.

The following table shows information about performance data that is specially collected by PFM - RM for Oracle in an environment in which PFM - RM for Oracle is installed.

Table 7–11: Information about performance data

Type of information	Details	File name	Collected by jpcras command
Error information during Oracle connection#1	Error code when an error occurs for the Oracle connection	`/opt/jp1pc/agt1/agent/`*instance-name*`/pdia_`*xxxxx*`_status.db`#2	Y
Internal maintenance information	Log file for OCI functions	`/opt/jp1pc/agt1/agent/`*instance-name*`/ocilog.txt`	Y

Legend:

Y: Can be collected

#1

This file may be created when an error occurs during an Oracle connection.

#2

xxxxx is replaced with any string.

(6) Other information

Also collect the following information:

- Arguments specified in the command when an error occurs during command execution

7.5 Collecting troubleshooting information

This section describes how to collect information when an error occurs.

7.5.1 In Windows

(1) Collecting dump information

To collect dump information in a Windows environment:

1. Open Task Manager.
2. Select the process tab.
3. Right-click the process name for which you want to collect dump information, and then select Create Dump File.
   Dump files are stored in the following folder:

   ```
   system-drive\Users\user-name\AppData\Local\Temp
   ```

4. Obtain the dump file from the folder created in step 3.
   If you have changed the environment variable settings so that dump files are output to a different folder, obtain the dump file from that folder.

(2) Execute the data collection command

Use the `jpcras` command to collect the information needed to investigate an error. The following procedure shows how to execute the data collection command. Note that you must perform these operations as an OS user who belongs to the Administrators group.

To execute the data collection command:

1. Log on to the host on which the service whose data you are collecting is installed.
2. At the command prompt, execute the following command to enable command extensions in the command interpreter.

   ```
   cmd /E:ON
   ```

3. Execute the `jpcras` command, specifying the data to be collected and the folder in which to store it.
   For example, to have the `jpcras` command store all collectible data in the folder `c:\tmp\jpc\agt`, specify the command as follows:

   ```
   installation-folder\tools\jpcras c:\tmp\jpc\agt all all
   ```

When you execute `jpcras` command, `jpctool service list -id * -host *` command is executed to acquire the PFM service list and check the startup status of these services. If the execution-host-name and other Performance Management System host communicate across a firewall or if the scale of the system is large, it may take time to execute `jpctool service list -id * -host *` command. In that case, by setting JPC_COLCTRLNOHOST environment variable to 1 `jpctool service list -id * -host *` command is not executed so that `jpcras` command can take shorter time.

For details about the jpcras command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

(3) Collect the Windows event log

In the Event Viewer window, save the Windows event log as a log file.

(4) Execute the data collection command (for logical host use)

When you run Performance Management in a logical host environment, the data is stored on a shared disk. In this case, collect data from both the executing node and the standby node.

Use the jpcras command to collect the information needed to investigate an error. The following procedure shows how to execute the data collection command. Note that you must perform these operations as an OS user who belongs to the Administrators group.

To execute the data collection command in a logical host environment:

1. Bring the shared disk online.

   For logical hosts, data is stored on a shared disk. On the executing node, make sure that the shared disk is online before collecting data.

2. Execute the jpcras command on both the executing node and the standby node, specifying the data to collect and the folder in which to store it.

   For example, to have the jpcras command store all collectible data in the folder c:\tmp\jpc\agt, specify the command as follows:

   ```
   installation-folder\tools\jpcras c:\tmp\jpc\agt all all
   ```

   If you execute the jpcras command without specifying the lhost argument, data relating to Performance Management is collected from all physical and logical hosts on that node. If any Performance Management programs are running in a logical host environment, the log files will be collected from the shared disk.

   If the shared disk is offline for the node on which you execute the jpcras command, you will be unable to acquire the files on the shared disk. However, the command will end normally without generating an error.

   Note

   You need to collect data from both the executing node and standby node by executing the data collection command on each node. Data from both nodes is required to investigate the status of the system leading up to and following failover.

   When you execute jpcras command, jpctool service list -id * -host * command is executed to acquire the PFM service list and check the startup status of these services. If the execution-host-name and other Performance Management System host communicate across a firewall or if the scale of the system is large, it may take time to execute jpctool service list -id * -host * command. In that case, by setting JPC_COLCTRLNOHOST environment variable to 1 jpctool service list -id * -host * command is not executed so that jpcras command can take shorter time.

   For details about the jpcras command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

3. Collect data about the cluster software.

   This data is required to determine whether a problem is caused by Performance Management or the cluster software. Collect data from which you can determine the results of any instructions, such as start and stop requests that the cluster software issued to Performance Management.

(5) Check the operation information

If an error occurs while an operation is being performed, check and record information about the operation. Check the following information:

- Details of the operation
- The time when the error occurred
- Machine configuration (version of each OS, host name, configuration of PFM - Manager and PFM - RM for Oracle)
- Whether the error is reproducible
- Name of any Performance Management user who logged in from PFM - Web Console

(6) Collecting the error information on the window

Collect hard copies of the following items:

- Hard copy of the window operation if an application error occurred
- Hard copy of the error message dialog box
  If detailed information is available, also copy its content.
- Hard copy of the Command Prompt window or Administrator Console window if a problem occurred during command execution
  To obtain a hard copy of the Command Prompt window or Administrator Console window in Windows, specify the following in the Command Prompt Properties window:
  - **Edit Options** under the **Options** tab
    Select **Quick Edit Mode**.
  - **Layout** tab
    Set **Height** under **Screen Buffer Size** to `500`.

(7) Collect other information

Collect the needed information in the following contents:

- Contents of **System** and **Application** in the Windows Event Viewer window
- Content of **System Information** under **System Tools** under **Accessories**

7.5.2 In UNIX

(1) Execute the data collection command

Use the `jpcras` command to collect the information needed to investigate an error. The following procedure shows how to execute the data collection command. Note that you must perform these operations as an OS user who has root privileges.

To execute the data collection command:

1. Log in to the host on which the service whose data you are collecting is installed.
2. Execute the `jpcras` command, specifying the data to collect and the directory in which to store it.

For example, to have the jpcras command store all collectible data in the directory /tmp/jpc/agt specify the command as follows:

```
/opt/jp1pc/tools/jpcras /tmp/jpc/agt all all
```

The data collected by the data collection command is compressed with the tar and compress commands and stored in the specified directory. The file is given the following name:

```
jpcras YYMMDD.tar.Z
```

YYMMDD indicates the date.

When you execute jpcras command, jpctool service list -id * -host * command is executed to acquire the PFM service list and check the startup status of these services. If the execution-host-name and other Performance Management System host communicate across a firewall or if the scale of the system is large, it may take time to execute jpctool service list -id * -host * command. In that case, by setting JPC_COLCTRLNOHOST environment variable to 1 jpctool service list -id * -host * command is not executed so that jpcras command can take shorter time.

For details about the jpcras command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

(2) Execute the data collection command (for logical host use)

When you run Performance Management in a logical host environment, the data is stored on a shared disk. In this case, collect data from both the executing node and the standby node.

Use the jpcras command to collect the information needed to investigate an error. The following procedure shows how to execute the data collection command. Note that you must perform these operations as an OS user who has root privileges.

To execute the data collection command in a logical host environment:

1. Mount the shared disk.

   For logical hosts, data is stored on a shared disk. On the executing node, make sure that the shared disk is mounted before collecting data.

2. Execute the jpcras command on both the executing node and the standby node, specifying the data to collect and the directory in which to store it.

   For example, to have the jpcras command store all collectible data in the directory /tmp/jpc/agt specify the command as follows:

   ```
   /opt/jp1pc/tools/jpcras /tmp/jpc/agt all all
   ```

   The data collected by the data collection command is compressed with the tar and compress commands and stored in the specified directory. The file is given the following name:

   ```
   jpcras YYMMDD.tar.Z
   ```

   YYMMDD indicates the date.

   If you execute the jpcras command without specifying the lhost argument, data relating to Performance Management is collected from all physical and logical hosts on that node. If any Performance Management programs are running in a logical host environment, their log files will be collected from the shared disk.

   If the shared disk is not mounted on the node on which you execute the jpcras command, you will be unable to acquire the files on the shared disk. However, the command will end normally without generating an error.

Note

Collect data from both the executing node and standby node by executing the data collection command on each node. Data from both nodes is required to investigate problems leading up to and following failover.

When you execute `jpcras` command, `jpctool service list -id * -host *` command is executed to acquire the PFM service list and check the startup status of these services. If the execution-host-name and other Performance Management System host communicate across a firewall or if the scale of the system is large, it may take time to execute `jpctool service list -id * -host *` command. In that case, by setting JPC_COLCTRLNOHOST environment variable to 1 `jpctool service list -id * -host *` command is not executed so that `jpcras` command can take shorter time.

For details about the `jpcras` command, see the chapter on commands in the manual *JP1/Performance Management Reference*.

3. Collect data about the cluster software.

   This data is required to determine whether a problem is caused by Performance Management or the cluster software. Collect data from which you can determine the results of any instructions, such as start and stop requests, that the cluster software issued to Performance Management.

(3) Check the operation information

If an error occurs while an operation is being performed, check and record information about the operation. Check the following information:

- Details of the operation
- The time when the error occurred
- Machine configuration (version of each OS, host name, configuration of PFM - Manager and PFM - RM for Oracle)
- Whether the error is reproducible
- Name of any Performance Management user who logged in from PFM - Web Console

(4) Collect error information

Collect the following error information:

- Messages output to the console when an error occurs during command execution

(5) Collect other information

Also collect the following information:

- Arguments specified in the command when an error occurs during command execution

7.6 Detecting errors in Performance Management

Performance Management provides a status management facility that allows you to check the status of Performance Management itself when an error occurs. This facility monitors the operating status of PFM - RM for Oracle and PFM - RM host and reports these operating statuses on the PFM - Web Console.

By using PFM service automatic restart facility, you can automatically restart PFM services when PFM services abnormally end, or you can regularly restart PFM services.

When you monitor the operating status of PFM - RM for Oracle or automatically restart PFM services, use the status management facility, which checks the detailed status of Performance Management services. As a result, it is required that the version number of PFM - RM for Oracle you are using supports the status maintenance facility and that you enable it. Note that there are no prerequisites for monitoring the PFM - RM hosts.

Alternatively, you can use JP1/Base, an integrated system monitor, to monitor the log file of Performance Management so that you can detect errors in Performance Management. By using these facilities, the system administrator can detect errors when they occur, identify the cause of them, and then take the appropriate action to recover from them.

For details about detecting errors in Performance Management itself, see the chapter on error detection in Performance Management in the *JP1/Performance Management User's Guide*.

7.7 Recovering from errors in Performance Management

When an error occurs on a Performance Management server, you must use backup files to restore the system to a normal state before the error occurred.

For details about how to do so, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

Appendixes

A. Estimating System Requirements

Hitachi recommends that you estimate in advance whether the computer to be configured in your PFM - RM for Oracle system has sufficient processing capacity to run the program.

This appendix describes the system requirements you need to consider.

A.1 Memory requirements

Memory requirements depend on how PFM - RM for Oracle is set up and used.

For details about the formula for estimating memory requirements, see the *Release Notes*.

A.2 Disk space requirements

Disk space requirements depend on the number of records used to collect performance data. To estimate the disk space requirements, you need to estimate the disk space requirements of the entire system and the Store database of Store version 1.0 or of Store version 2.0. For details about the formula for estimating these requirements, see the *Release Notes*.

A.3 Disk space requirements for operation in a cluster system

The disk space requirements for operation in a cluster system are estimated in the same way as for operation on a single node. For details about the disk space requirements, see the *Release Notes*.

B. Kernel Parameters

To use PFM - RM for Oracle, you must adjust the OS kernel parameters to allocate resources required for execution processing. This appendix describes the kernel parameters that must be adjusted.

For details about adjusting the kernel parameters for using PFM - Manager and PFM - Web Console in a UNIX environment, see the list of kernel parameters in the appendixes in the *JP1/Performance Management Planning and Configuration Guide*.

B.1 Linux

(1) System resources required for PFM - RM for Oracle

The following table shows the kernel parameters that must be adjusted in Linux environment.

Table B–1: System resources required for PFM - RM for Oracle (Linux)

System resource	Parameter	Estimate
Semaphore	SEMMNI	2 **x** *number-of-instances-of-PFM-RM-for-Oracle*
	SEMMNS	2 **x** *number-of-instances-of-PFM-RM-for-Oracle*

C. List of Identifiers

When you operate PFM - RM for Oracle or extract performance data from its Store database, you may require an identifier of PFM - RM for Oracle. The following table describes the PFM - RM for Oracle identifiers.

Table C–1: List of PFM - RM for Oracle identifiers

Use	Name	Identifier	Description
Command	Product ID	`1`	The product ID is part of the service ID required when using a command to check the Performance Management system configuration or to back up performance data. For details about service IDs, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.
	Service key	`RMOracle`	A service key is required when using a command to start or stop PFM - RM for Oracle. For details about service keys, see the chapter on Performance Management functionality in the *JP1/Performance Management Planning and Configuration Guide*.
Displaying the GUI	Product name	`RMOracle`	A product name identifies a product. It is used when the PFM - Web Console window is displayed.
Help	Help ID	`pca1`	The help ID indicates that the help is for PFM - RM for Oracle.

D. List of Processes

This appendix describes the processes of PFM - RM for Oracle.

The following table lists the PFM - RM for Oracle process. The value following the process name is the number of processes that can be started concurrently.

Note:

The process and limit numbers are identical whether PFM - RM for Oracle on a physical host or logical host.

Table D–1: Processes of PFM - RM for Oracle (for Windows)

Process name (Process count)	Function
`jpcagt1.exe` (*n*)	The process of the Remote Monitor Collector service. One process is started for each instance of PFM - RM for Oracle.
`jpc1collect.exe` (*n*)[#1]	The process for collecting performance data. One process is started for each instance.
`jpcsto.exe` (*n*)	The process of the Remote Monitor Store service. One process is started for each instance of PFM - RM for Oracle.
`stpqlpr.exe` (1)[#2]	The process for backup or export of the Store database

#1

This process is a child process of the `jpcagt1.exe` process.

#2

This process is a child process of the `jpcsto.exe` process.

Table D–2: Processes of PFM - RM for Oracle (for UNIX)

Process name (Process count)	Function
`jpcagt1` (*n*)	The process of the Remote Monitor Collector service. One process is started for each instance of PFM - RM for Oracle.
`jpc1collect_10` (*n*)[#1]	The process for collecting performance data. One process is started for each instance. Monitored database: Oracle11g or later
`agt1/jpcsto` (*n*)	The process of the Remote Monitor Store service. One process is started for each instance of PFM - RM for Oracle.
`stpqlpr` (1)[#2]	The process for backup or export of the Store database

#1

This process is a child process of the `jpcagt1` process.

#2

This process is a child process of the `jpcsto` process.

E. List of Port Numbers

This appendix lists the port numbers used by PFM - RM for Oracle.

For details about the port numbers and firewall routing in PFM - Manager and PFM - Base, see the appendixes in the manual *JP1/Performance Management Reference*.

The port numbers can be changed to suit the user environment.

For details about changing a port number, see the chapter on installation and setup in the *JP1/Performance Management Planning and Configuration Guide*. The TCP/IP protocol is used.

Note:

- Performance Management supports network address translation in static mode (Basic NAT), which provides one-to-one address mapping.
- Performance Management does not support dynamic NAT or NAPT containing port translations (IP Masquerade and NAT+).

E.1 Port numbers for PFM - RM for Oracle

The following table shows the port numbers used by PFM - RM for Oracle.

Table E–1: Port numbers used by PFM - RM for Oracle

Port number	Service name	Parameter	Use
Automatic#1	Remote Monitor Store service	`jp1pcsto1` [*nnn*] #2	Used for recording performance data or acquiring a historical report
Automatic#1	Remote Monitor Collector service	`jp1pcagt1` [*nnn*]#2	Used for binding an alarm or acquiring a real-time report

#1

A port number not already being used by the system is assigned automatically every time the service is restarted.

#2

When multiple instances are created, a sequential number (*nnn*) is appended to the second and subsequent instances. The first instance does not have a sequential number.

E.2 Routing through a firewall

If PFM - Manager and PFM - RM for Oracle communicate across a firewall, set fixed port numbers for all PFM - Manager and PFM - RM for Oracle ports.

For more details, see the section describing the firewall passage direction in the manual *JP1/Performance Management Reference*.

If Oracle database for monitoring target and PFM - RM for Oracle communicate across a firewall, set to connect with Oracle database from Oracle client.

F. PFM - RM for Oracle Properties

This appendix lists the properties of the following PFM - RM for Oracle services that are displayed in PFM - Web Console:

- Remote Monitor Store service
- Remote Monitor Collector service
- Remote agent and group agent

F.1 List of Remote Monitor Store service properties

The following table lists the properties for the Remote Monitor Store service of PFM - RM for Oracle.

Table F–1: List of Remote Monitor Store service properties of PFM - RM for Oracle

Directory name	Property name	Description
--	First Registration Date	Displays the date and time on which the service was first recognized by PFM - Manager.
	Last Registration Date	Displays the date and time on which the service was last recognized by PFM - Manager.
General	--	Stores information such as the host name and directories. The properties in this folder cannot be changed.
	Directory	Displays the name of the current directory where the service runs.
	Host Name	Displays the name of the physical host on which the service runs.
	Process ID	Displays the process ID of the service.
	Physical Address	Displays the IP address and port number of the host on which the service runs when IPv6 communication is disabled.
	Physical Address(IPv4)	Displays the IP address (IPv4) of the host on which the service runs when IPv6 communication is enabled.
	Physical Address(IPv6)	Displays the IP address (IPv6) of the host on which the service runs when IPv6 communication is enabled.
	Port Number	Displays the port number on which the service runs when IPv6 communication is enabled.
	User Name	Displays the name of the user who executed the service process.
	Time Zone	Displays the time zone in which the service was used.
System	--	Stores information about the OS under which the service runs. The properties in this folder cannot be changed.
	CPU Type	Displays the CPU type.
	Hardware ID	Displays the hardware ID.
	OS Type	Displays the type of OS.
	OS Name	Displays the name of the OS.
	OS Version	Displays the version of the OS.

Directory name		Property name	Description
Network Services		--	Stores information about the common library for Performance Management communication. The properties in this folder cannot be changed.
		Build Date	Displays the date on which the Remote Monitor Store service was created.
		INI File	Displays the directory containing the jpcns.ini file.
Network Services	Service	--	Stores information about the service. The properties in this folder cannot be changed.
		Description	Displays the host name in the following format: *instance-name_host-name*
		Local Service Name	Displays the service ID.
		Remote Service Name	Displays the service ID of the Master Manager service on the connection-target PFM - Manager host.
		EP Service Name	Displays the service ID of the Correlator service on the connection-target PFM - Manager host.
Retention		--	Sets the data retention period when the Store version is 1.0. Because the Remote Monitor Store service does not support Store version 1.0, the properties stored in this directory cannot be changed.
		Product Interval - Minute Drawer	The retention period for records of the PI record type per minute is displayed. The specifiable value is fixed to Day.
		Product Interval - Hour Drawer	The retention period for records of the PI record type per hour is displayed. The specifiable value is fixed to Day.
		Product Interval - Day Drawer	The retention period for records of the PI record type per day is displayed. The specifiable value is fixed to 2Days.
		Product Interval - Week Drawer	The retention period for records of the PI record type per week is displayed. The specifiable value is fixed to Week.
		Product Interval - Month Drawer	The retention period for records of the PI record type per month is displayed. The specifiable value is fixed to Month.
		Product Interval - Year Drawer	The retention period for records of the PI record type per year is displayed. The specifiable value is fixed to Year.
Retention Ex		--	Sets the data retention period. For details, see the chapter on management of operation monitoring data in the *JP1/Performance Management User's Guide*.
Retention Ex	Product Interval - *record-ID-of-PI-record-type*	--	Sets the retention period for records of the PI record type.
		Period - Minute Drawer (Day)	Sets the retention period for records of the PI record type per minute. Values from 0 to 366 days can be specified, on a daily basis.
		Period - Hour Drawer (Day)	Sets the retention period for records of the PI record type per hour. Values from 0 to 366 days can be specified, on a daily basis.
		Period - Day Drawer (Week)	Sets the retention period for records of the PI record type per day. Values from 0 to 522 weeks can be specified, on a weekly basis.

Directory name		Property name	Description
Retention Ex	Product Interval - *record-ID-of-PI-record-type*	Period - Week Drawer (Week)	Sets the retention period for records of the PI record type per week. Values from 0 to 522 weeks can be specified, on a weekly basis.
		Period - Month Drawer (Month)	Sets the retention period for records of the PI record type per month. Values from 0 to 120 months can be specified, on a monthly basis.
		Period - Year Drawer (Year)	Sets the retention period for records of the PI record type per year. This is fixed at 10.
	Product Detail - *record-ID-of-PD-record-type*	Period (Day)	Sets the retention period for each ID for records of the PD record type. Retention periods can be set as an integer from 0 to 366, in days.
Disk Usage		--	This folder contains information for disk space used by each database. The values in this folder are those current at the time the properties are displayed. The properties in this folder cannot be changed.
		Product Interval	Displays the disk space used by the records of PI record type
		Product Detail	Displays the disk space used by the records of PD record type
		Product Alarm	Displays the disk space used by the records of PA record type. This property is not used in PFM - RM for Oracle.
		Product Log	Displays the disk space used by the records of PL record type. This property is not used in PFM - RM for Oracle.
		Total Disk Usage	Displays the total disk space used by the entire database.
Configuration		--	Displays the property of the Remote Monitor Store service.
		Store Version	Displays the version of the Store database.
Multiple Manager Configuration		Primary Manager	Displays the host name of the monitoring manager specified as the primary manager for multiple monitoring. You cannot change this property.
		Secondary Manager	Displays the host name of the monitoring manager specified as the secondary manager for multiple monitoring. You cannot change this property.

Legend:

--: Not applicable

F.2 List of Remote Monitor Collector service properties

The following table lists the properties for the Remote Monitor Collector service of PFM - RM for Oracle.

Table F–2: List of Remote Monitor Collector service properties of PFM - RM for Oracle

Directory name	Property name	Description
--	First Registration Date	Displays the date and time on which the service was first recognized by PFM - Manager.

Directory name		Property name	Description
--		Last Registration Date	Displays the date and time on which the service was last recognized by PFM - Manager.
		Data Model Version	Displays the version of the data model.
General		--	Stores information such as the host name and directories. The properties in this folder cannot be changed.
		Directory	Displays the name of the current directory where the service runs.
		Host Name	Displays the name of the physical host on which the service runs.
		Process ID	Displays the process ID of the service.
		Physical Address	Displays the IP address and port number of the host on which the service runs when IPv6 communication is disabled.
		Physical Address(IPv4)	Displays the IP address (IPv4) of the host on which the service runs when IPv6 communication is enabled.
		Physical Address(IPv6)	Displays the IP address (IPv6) of the host on which the service runs when IPv6 communication is enabled.
		Port Number	Displays the port number on which the service runs when IPv6 communication is enabled.
		User Name	Displays the name of the user who executed the service process.
		Time Zone	Displays the time zone in which the service is used.
System		--	Stores information about the OS under which the service runs. The properties in this folder cannot be changed.
		CPU Type	Displays the CPU type.
		Hardware ID	Displays the hardware ID.
		OS Type	Displays the type of OS.
		OS Name	Displays the name of the OS.
		OS Version	Displays the version of the OS.
Network Services		--	Stores information about the common library for Performance Management communication. The properties in this folder cannot be changed.
		Build Date	Displays the date on which the Remote Monitor Collector service was created.
		INI File	Displays the name of the directory containing the `jpcns.ini` file.
Network Services	Service	--	Stores information about the service. The properties in this folder cannot be changed.
		Description	Displays the host name in the following format: *instance-name_host-name*
		Local Service Name	Displays the service ID.
		Remote Service Name	Displays the service ID of the Remote Monitor Store service to which the Remote Monitor Collector service connects.
		EP Service Name	Display the service ID of the connection target Correlator service.

Directory name		Property name	Description
Network Services	Service	AH Service Name	Displays the service ID of the Action Handler service on the same host.
JP1 Event Configurations		--	Specify the condition under which JP1 event is issued.
		Each service	The user selects **Yes** or **No** from a list (Remote Monitor Collector service, Remote Monitor Store service, Action Handler service, and Status Server service) to specify whether each service issues JP1 system event.
		JP1 Event Send Host	Specify the connection target JP1/Base event server. Note that you can specify the event server on the same logical or physical host that the Action Handler service is running. The value you specify must consist of alphanumeric characters, ".", and "-", and must not exceed 255 bytes. If you exceed 255 bytes, the value you specify is discarded. If you exceed 255 bytes or do not specify this value, the host on which Action Handler service is running is used as the eventissuing host. If you specify **localhost**, the physical host is set to this property.
		Monitoring Console Host	Specify the PFM - Web Console host, if you open a PFM - Web Console login page by using JP1/IM - Manager monitor startup function. The value you specify must consist of alphanumeric characters, ".", and "-", and must not exceed 255 bytes. If you exceed 255 bytes, the value you specify is discarded. If you exceed 255 bytes or do not specify this value, the connection target PFM - Manager host is set to this value.
		Monitoring Console Port	Specify the port number (HTTP request port number). The range of the value is from 1 to 65535. If the value you specify is out of the range, the value is discarded. If the value is out of the range or you do not specify this value, 20358 is set to this value.
		Monitoring Console Https	Specifies whether to use HTTPS-encrypted communication to access PFM - Web Console when PFM - Web Console is started by JP1/IM - Manager monitor startup. By default, thisproperty is set to No. • Yes: Use encrypted communication. • No: Do not use encrypted communication.
JP1 Event Configurations	Alarm	JP1 Event Mode	Specify which type of events to issue when the alarm status changes. • JP1 User Event: issuing JP1 user Event. • JP1 System Event: issuing JP1 system event.
Detail Records		--	Stores the properties of a record of PD record type. The record ID of the collected record is shown in bold type.
Detail Records	*record-ID*[#1]	--	Stores the properties of a record.
		Description	Displays a description of the record. This property cannot be changed.
		Log	The user selects **Yes** or **No** from a list to specify whether to save the record to the Store database. The record is saved when this value is **Yes** and the value of **Collection Interval** is greater than zero.
		Log(ITSLM)	Displays **Yes** or **No** to indicate whether to save the records to the Store database of PFM - RM for Oracle from JP1/SLM - Manager. For this property, **No** (fixed value) is displayed. This property is read-only and cannot be changed.
		Monitoring(ITSLM)	Displays **Yes** or **No** to indicate the JP1/SLM - Manager setting for whether to send records to JP1/SLM - Manager. For this property, **No** (fixed value) is displayed. This property is read-only and cannot be changed.
		Collection Interval	Specifies the data collection interval. The value is in seconds, and can be from 0 to 2,147,483,647. When zero is specified, no data is collected.

Directory name		Property name	Description
Detail Records	*record-ID*[#1]	Collection Offset	Specifies the offset value to apply before the first collection cycle. The value is in seconds, and can be from 0 to 32,767, but must be less than the value specified in **Collection Interval**. The time at which the collected data is recorded matches the collection interval time, regardless of the offset value.
		Over 10 Sec Collection Time	This property is only displayed if collection of historical data takes precedence over the display processing of real-time reports (if the functionality that prioritizes the collection of historical data is enabled).[#2] Whether record collection might require 10 seconds or more is indicated by **Yes** or **No**. • **Yes**: Might require 10 seconds or more. • **No**: Does not require 10 seconds. The value of this property cannot be changed.
		LOGIF	Specifies conditions for saving the record to the database. Only records that satisfy the conditions are saved. This property shows the conditional expression (character string) specified in the LOGIF Expression Editor window, which opens when the user clicks **LOGIF** in the bottom frame of the **Properties** pane in the PFM - Web Console's **Services** page.
Interval Records		--	Stores the properties of a record of PI record type. The record ID of the collected record is shown in bold type.
Interval Records	*record-ID*[#1]	--	Stores the properties of the record.
		Description	Displays a description of the record. This property cannot be changed.
		Log	The user selects **Yes** or **No** from a list to specify whether to save the record to the Store database. The record is saved when this value is **Yes** and the value of **Collection Interval** is greater than zero.
		Log(ITSLM)	Displays **Yes** or **No** to indicate whether to save the records to the Store database of PFM - RM for Oracle from JP1/SLM - Manager. For this property, **No** (fixed value) is displayed. This property is read-only and cannot be changed.
		Monitoring(ITSLM)	Displays **Yes** or **No** to indicate the JP1/SLM - Manager setting for whether to send records to JP1/SLM - Manager. For this property, **No** (fixed value) is displayed. This property is read-only and cannot be changed.
		Collection Interval	Specifies the data collection interval. The value is in seconds, and can be from 0 to 2,147,483,647. When zero is specified, no data is collected.
		Collection Offset	Specifies the offset value to apply before the first collection cycle. The value is in seconds, and can be from 0 to 32,767, but must be less than the value specified in **Collection Interval**. The time at which the collected data is recorded matches the collection interval time, regardless of the offset value.
		Over 10 Sec Collection Time	This property is only displayed if collection of historical data takes precedence over the display processing of real-time reports (if the functionality that prioritizes the collection of historical data is enabled).[#2] Whether record collection might require 10 seconds or more is indicated by **Yes** or **No**. • **Yes**: Might require 10 seconds or more. • **No**: Does not require 10 seconds. The value of this property cannot be changed.

Directory name		Property name	Description
Interval Records	*record-ID*[#1]	LOGIF	Specifies conditions for saving the record to the database. Only records that satisfy the conditions are saved. This property shows the conditional expression (character string) specified in the LOGIF Expression Editor window, which opens when the user clicks **LOGIF** in the bottom frame of the **Properties** pane in the PFM - Web Console's **Services** page.
Log Records		--	Stores the properties of a record of PL record type. This folder is not used because PFM - RM for Oracle does not use this record.
Monitoring Targets		--	Stores the properties of the monitored hosts.
Monitoring Targets	Monitoring target name	--	Displays the descriptions of each monitoring target.
		Target Name	Displays the monitoring target name. This property cannot be changed.
		Target Host	Displays the monitored host name. This property cannot be changed.
Health Check Configurations		Health Check for Target Hosts	Specifies whether to poll a monitored host. The setting is applied to all of the monitored hosts in an instance.
Restart Configurations		--	Specifies the conditions for automatically restarting the PFM services.
		Restart when Abnormal Status	Specifies whether to automatically restart a service when the Status Server service cannot obtain the status of the Action Handler service, Remote Monitor Collector service, and Remote Monitor Store service in a normal state.
		Restart when Single Service Running	Specifies whether to automatically restart a service when only either the Remote Monitor Collector service or the Remote Monitor Store service is running.
Restart Configurations	Remote Monitor Collector	Auto Restart	Specifies whether to use automatic restart for the Remote Monitor Collector service.
		Auto Restart - Interval (Minute)	Specifies the interval for checking the operating status of a service when automatic restart is used. You can specify a value from 1 through 1,440 (minutes).
		Auto Restart - Repeat Limit	Specifies the number of consecutive times restart is attempted when automatic restart is used. You can specify an integer value from 1 through 10.
		Scheduled Restart	Select **Yes** or **No** from the list items to specify whether to use the normal restart procedure for the Remote Monitor Collector service.
		Scheduled Restart - Interval	Specifies the restart interval when the normal restart procedure is used. You can specify an integer value from 1 through 1,000.
		Scheduled Restart - Interval Unit	Selects **Hour**, **Day**, **Week**, or **Month** from the list items to specify the unit for the restart interval when the normal restart procedure is used.
		Scheduled Restart - Origin - Year	Specifies the year when restart is performed. You can specify an integer value from 1971 through 2035.
		Scheduled Restart - Origin - Month	Specifies the month when restart is performed. You can specify an integer value from 1 through 12.
		Scheduled Restart - Origin - Day	Specifies the day when restart is performed. You can specify an integer value from 1 through 31.

Directory name		Property name	Description
Restart Configurations	Remote Monitor Collector	Scheduled Restart - Origin - Hour	Specifies the time (hour) when restart is performed. You can specify an integer value from 0 through 23.
		Scheduled Restart - Origin - Minute	Specifies the time (minute) when restart is performed. You can specify an integer value from 0 through 59.
	Remote Monitor Store	Auto Restart	Specifies whether to use automatic restart for the Remote Monitor Store service.
		Auto Restart - Interval (Minute)	Specifies the interval for checking the operating status of a service when automatic restart is used. You can specify a value from 1 through 1,440 (minutes).
		Auto Restart - Repeat Limit	Specifies the number of consecutive times restart is attempted when automatic restart is used. You can specify a value from 1 through 10.
		Scheduled Restart	Select **Yes** or **No** from the list items to specify whether to use the normal restart procedure for the Remote Monitor Store service.
		Scheduled Restart - Interval	Specifies the restart interval when the normal restart procedure is used. You can specify an integer value from 1 through 1000.
		Scheduled Restart - Interval Unit	Selects **Hour**, **Day**, **Week**, or **Month** from the list items to specify the unit for the restart interval when the normal restart procedure is used.
		Scheduled Restart - Origin - Year	Specifies the year when restart is performed. You can specify an integer value from 1971 through 2035.
		Scheduled Restart - Origin - Month	Specifies the month when restart is performed. You can specify an integer value from 1 through 12.
		Scheduled Restart - Origin - Day	Specifies the day when restart is performed. You can specify an integer value from 1 through 31.
		Scheduled Restart - Origin - Hour	Specifies the time (hour) when restart is performed. You can specify an integer value from 0 through 23.
		Scheduled Restart - Origin - Minute	Specifies the time (minute) when restart is performed. You can specify an integer value from 0 through 59.
	Action Handler	Auto Restart	Specifies whether to use automatic restart for the Action Handler service.
		Auto Restart - Interval (Minute)	Specifies the interval for checking the operating status of a service when automatic restart is used. You can specify a value from 1 through 1,440 (minutes).
		Auto Restart - Repeat Limit	Specifies the number of consecutive times restart is attempted when automatic restart is used. You can specify a value from 1 through 10.
		Scheduled Restart	Select **Yes** or **No** from the list items to specify whether to use the normal restart procedure for the Action Handler service.
		Scheduled Restart - Interval	Specifies the restart interval when the normal restart procedure is used. You can specify an integer value from 1 through 1000.

Directory name		Property name	Description
Restart Configurations	Action Handler	Scheduled Restart - Interval Unit	Selects **Hour**, **Day**, **Week**, or **Month** from the list items to specify the unit for the restart interval when the normal restart procedure is used.
		Scheduled Restart - Origin - Year	Specifies the year when restart is performed. You can specify an integer value from 1971 through 2035.
		Scheduled Restart - Origin - Month	Specifies the month when restart is performed. You can specify an integer value from 1 through 12.
		Scheduled Restart - Origin - Day	Specifies the day when restart is performed. You can specify an integer value from 1 through 31.
		Scheduled Restart - Origin - Hour	Specifies the time (hour) when restart is performed. You can specify an integer value from 0 through 23.
		Scheduled Restart - Origin - Minute	Specifies the time (minute) when restart is performed. You can specify an integer value from 0 through 59.
ITSLM Connection Configuration		--	Displays information about the linked JP1/SLM - Manager.
ITSLM Connection Configuration	ITSLM Connection	--	Displays information about the connection-target JP1/SLM - Manager.
		ITSLM Host	Displays the host name of the connected JP1/SLM - Manager. If a connection with JP1/SLM - Manager has not been established, this property is not displayed.
		ITSLM Port	Displays the port number of the connected JP1/SLM - Manager. If a connection with JP1/SLM - Manager has not been established, this property is not displayed.
	MANAGE ITSLM CONNECTION	--	Specifies whether to end the connection with JP1/SLM - Manager.
		DISCONNECT ITSLM CONNECTION	Selects from the list items the JP1/SLM - Manager host name that is to be disconnected. If **(empty string)** is selected from the list items, nothing is done. If a connection with JP1/SLM - Manager has not been established, only **(empty string)** is displayed in the list items.
Multiple Manager Configuration		Primary Manager	Displays the host name of the monitoring manager specified as the primary manager for multiple monitoring. You cannot change this property.
		Secondary Manager	Displays the host name of the monitoring manager specified as the secondary manager for multiple monitoring. You cannot change this property.
Remote Monitor Configuration		--	Stores the properties for settings specific to PFM - RM for Oracle.
Remote Monitor Configuration	Remote Monitor	--	Displays an overview of the Remote Monitor Collector service. The properties stored in this folder cannot be changed.
		Product	Displays product ID 1.
		Instance	Displays the instance name specified with the `jpcconf inst setup` command.
		Description	Displays the description of the service.
		Version	Displays the Oracle version being monitored.

Directory name		Property name	Description
Remote Monitor Configuration	jpc1collect	--	Displays the properties of the data collection program of the Remote Monitor Collector service.
		ORACLE_HOME	Displays the value of oracle_home that was specified when the instance environment was set up. This property cannot be changed.
		ORACLE_SID	Displays the value of oracle_sid that was specified when the instance environment was set up. This property cannot be changed.
		ORACLE_USER	Displays the value of oracle_user that was specified when the instance environment was set up. This property cannot be changed.
		NET_SERVICE_NAME	Displays the value of net_service_name that you specify when you set up the instance environment. This property cannot be changed.
		LOG_PATH	Displays the value of log_path that was specified when the instance environment was set up. This property can be changed.[#3]
		LOG_SIZE	Displays the value of log_size that was specified when the instance environment was set up. This property can be changed.[#3]
		TIMEOUT	Displays the value of timeout specified when the instance environment was set up. If this is updated with a value of 1 to 9 specified, it is not changed. This property can be changed.[#3]
		SQL_OPTION	Displays the value of sql_option specified when the instance environment was set up. This property can be changed.[#3]
		NUMERIC_10	Displays the value of numeric_10 specified when the instance environment was set up. This property can be changed.[#3]
		STARTUP_ALWAYS	Displays the value of startup_always specified when the instance environment was created. This property can be changed.[#3]
		RETRY_TIME	Displays the number of seconds that reconnection is attempted when an authentication error occurs while connection is being established with Oracle. In UNIX, the value is always set to 0. This property cannot be changed.
		UNDOSPACE_OPTION	Displays the value of undospace_option specified when the instance environment was created. This property can be changed.[#3]
		LOCALTEMP_OPTION	Displays the value of localtemp_option that you specify when you set up the instance environment. This property cannot be changed.[#3]
		NLS_LANG	Displays the value of nls_lang specified when the instance environment was created. This property cannot be changed.

Legend:

--: Not applicable.

#1

The dictionary name is shown as the record ID excluding the database ID. For details about the record ID of each type of record, see *5. Records*.

#2

For details, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

#3

To reflect updated values, restart the Remote Monitor Collector service.

F.3 List of remote agent and group agent properties

The following table lists the properties for remote agent and group agent of PFM - RM for Oracle.

Table F–3: List of remote agent and group agent properties

Directory name	Property name	Description	Remote agent	Group agent
--	First Registration Date	Displays the first date and time that the service was recognized by PFM - Manager.	N	N
	Last Registration Date	Displays the latest date and time that the service was recognized by PFM - Manager.	N	N
	Data Model Version	Displays the version of the data model.	N	N
Remote Monitoring	--	Stores the properties of remote agent and group agent.	N	N
	Agent Type	Displays the agent type. • Remote agent: Remote Agent • Group agent: Group Agent	N	N
	RMName	Displays the service ID of PFM - RM for Oracle.	N	N
	Target Name	Displays the monitoring target name.	N	--
	Target Host	Displays the monitoing target host name.	N	--
	Group Name	Displays the group name.	--	N
	Primary Host	Displays the primary host name.	--	N
	Grouping Targets	Displays the list of monitoring target name for a grouping target (in the listbox).	--	Y
Detail Records	--	Stores the properties of a record of PD record type. The record ID of the collected record is shown in bold type.	N	N

Directory name		Property name	Description	Remote agent	Group agent
Detail Records	*record-ID*[#1]	--	Stores the properties of a record.	N	N
		Description	Displays a description of the record.	N	N
		Log[#2]	Display whether the record is saved or not. The record is saved when this value is **Yes**. Not saved when **No**. The record is saved to the database when this value is **Yes** and the value of Collection Interval is more than 0.	Y	Y[#3]
		Log (ITSLM)[#2]	Displays **Yes** or **No** to indicate whether to save the records to the Store database of PFM - RM for Oracle from JP1/SLM - Manager. Records are saved to the database when this value is **Yes** and the value of Collection Interval is more than 0. This property cannot be changed.	N	N
		Monitoring (ITSLM)	Displays **Yes** or **No** to indicate the JP1/SLM - Manager setting for specifying whether to send records to JP1/SLM - Manager. This property cannot be changed.	N	N
		Collection Interval	Specifies the data collection interval. The value is in seconds, and can be from 0 to 2,147,483,647. When zero is specified, no data is collected.	N[#4]	N[#4]
		Collection Offset	Specifies the offset value to apply before the first collection cycle. The value is in seconds, and can be from 0 to 32,767, but must be less than the value specified in **Collection Interval**. The time at which the collected data is recorded matches the collection interval time, regardless of the offset value.	N[#4]	N[#4]
		Over 10 Sec Collection Time	This property is only displayed if collection of historical data takes precedence over the display processing of real-time reports (if the functionality that prioritizes the collection of historical data is enabled).[#2] Whether record collection might require 10 seconds or more is indicated by **Yes** or **No**. • **Yes**: Might require 10 seconds or more. • **No**: Does not require 10 seconds. The value of this property cannot be changed.	N	N
		Realtime Report Data Collection Mode	Specifies the display mode of the real-time report. • **Reschedule**: Reschedule mode is used. • **Temporary Log**: Temporary save mode is used.	Y	Y

Directory name		Property name	Description	Remote agent	Group agent
Detail Records	*record-ID*[#1]	Realtime Report Data Collection Mode	Note that temporary save mode (**Temporary Log**) must be specified for records whose Over 10 Sec Collection Time value is **Yes**.	Y	Y
		LOGIF	Specifies conditions for saving the record to the database. Only records that satisfy the conditions are saved. This property shows the conditional expression (character string) specified in the LOGIF Expression Editor window, which opens when the user clicks **LOGIF** in the bottom frame of the **Properties** pane in the PFM - Web Console's **Services** page.	N[#4]	N[#4]
Interval Records		--	Stores the properties of a record of PI record type. The record ID of the collected record is shown in bold type.	N	N
Interval Records	*record-ID*[#1]	--	Stores the properties of a record.	N	N
		Description	Displays a description of the record.	N	N
		Log[#2]	Display whether the record is saved or not. The record is saved when this value is **Yes**. Not saved when **No**. The record is saved to the database when this value is **Yes** and the value of Collection Interval is more than 0.	Y	Y[#3]
		Log (ITSLM)[#2]	Displays **Yes** or **No** to indicate whether to save the records to the Store database of PFM - RM for Oracle from JP1/SLM - Manager. Records are saved to the database when this value is **Yes** and the value of Collection Interval is more than 0. This property cannot be changed.	N	N
		Monitoring (ITSLM)	Displays **Yes** or **No** to indicate the JP1/SLM - Manager setting for specifying whether to send records to JP1/SLM - Manager. This property cannot be changed.	N	N
		Collection Interval	Specifies the data collection interval. The value is in seconds, and can be from 0 to 2,147,483,647. When zero is specified, no data is collected.	N[#4]	N[#4]
		Collection Offset	Specifies the offset value to apply before the first collection cycle. The value is in seconds, and can be from 0 to 32,767, but must be less than the value specified in **Collection Interval**. The time at which the collected data is recorded matches the collection interval time, regardless of the offset value.	N[#4]	N[#4]
		Over 10 Sec Collection Time	This property is only displayed if collection of historical data takes precedence over the display	N	N

Directory name		Property name	Description	Remote agent	Group agent
Interval Records	*record-ID*[#1]	Over 10 Sec Collection Time	processing of real-time reports (if the functionality that prioritizes the collection of historical data is enabled).[#2] Whether record collection might require 10 seconds or more is indicated by **Yes** or **No**. • **Yes**: Might require 10 seconds or more. • **No**: Does not require 10 seconds. The value of this property cannot be changed.	N	N
		Realtime Report Data Collection Mode	Specifies the display mode of the real-time report. • **Reschedule**: Reschedule mode • **Temporary Log**: Temporary save mode Note that temporary save mode (**Temporary Log**) must be specified for records whose Over 10 Sec Collection Time value is **Yes**.	Y	Y
		LOGIF	Specifies conditions for saving the record to the database. Only records that satisfy the conditions are saved. This property shows the conditional expression (character string) specified in the LOGIF Expression Editor window	N[#4]	N[#4]
Log Records		--	Contains the properties for records of the PL record type. PFM - RM for Oracle does not use this property.	N	N
Remote Monitor Configuration		--	Stores the configuration properties unique to the monitoring target.	N	--
Remote Monitor Configuration	Target	--	Displays the overview of the remote agent service.	N	--

Legend:

Y: Displayed and updatable

N: Displayed but not updatable

--: Not displayed

#1:

Displays the record ID excluding the database ID as the folder name. For details about the record ID for each record, see *5. Records*.

#2:

If the value of either property is **Yes**, the record is saved in the Store database.

#3:

PFM - RM for Oracle associates only one monitoring target with one instance environment. As a result, the use of group agent is disabled. When you change the value of this property, do not change it from the group agent property. Change the value from the remote agent property.

#4:

Displays the value you set up PFM - RM for Oracle.

#5

For details, see the chapter on troubleshooting in the *JP1/Performance Management User's Guide*.

G. List of Files and Directories

This appendix lists the files and directories of PFM - RM for Oracle for each OS.

The Performance Management installation directory for each OS is as follows.

In Windows:

Performance Management can be installed in any folder. The default installation folder is *system-drive*\Program Files(x86)\Hitachi\jp1pc\.

In UNIX:

The installation directory for Performance Management is /opt/jp1pc/.

G.1 PFM - RM for Oracle files and directories

(1) Windows

The following table lists the files and folders for the Windows version of PFM - RM for Oracle.

Table G–1: List of files and folders for PFM - RM for Oracle (Windows version)

Folder name	File name	Description
installation-folder\	instagt1.ini	Relay file for internal processing
installation-folder\agt1\	--	Base folder of PFM - RM for Oracle
	Readme_ja.txt	README file (Japanese)
	Readme_en.txt	README file (English)
	insrules.dat	Instance startup environment rule definition file
	PATCHLOG.TXT	Relay file for internal processing
	jpcagtras.bat	Maintenance information collection program
	jpcagtras.exe	
	VERSION.txt	Version file
	multilingual.dat	Maintenance data file
installation-folder\agt1\agent\	--	Base folder of the Remote Monitor Collector service
	agtlist.ini	List of instances
	inssetup.bat.instmpl	Relay file for internal processing
	jpcagt.ini.instmpl	Remote Monitor Collector service startup initialization template file
	jpcagt1.exe	Service executing program of Remote Monitor Collector
	jpc1collect_9.exe	Performance data collection program of Remote Monitor Collector service (for Oracle11g or later)
	target.ini.tmpl	Configuration template file for monitoring targets

Folder name	File name	Description
installation-folder\agt1\agent\	group.ini.tmpl	Configuration template file for group agents
	targetrules.dat	Rule file for making monitoring targets
	GARULES.DAT	Rule file for making group agents
installation-folder\agt1\agent\sql\	--	SQL script storage folder
	sp_rdrp.sql	SQL script file for deleting an Oracle Database object
	sp_rist.sql	SQL script file for registering an Oracle Database object
	mk_rmus.sql	Script file for creating an Oracle account used by PFM - RM for Oracle
installation-folder\agt1\agent\ *instance-name*\	--	Base folder of Remote Monitor collector service (for each instance)[#1]
	COSLMMI.DB	Data file for the JP1/SLM linkage setting
	COSLMMI.IDX	Index file for the data file for the JP1/SLM linkage setting
	COSLMMI.LCK	Lock file for the data file for the JP1/SLM linkage setting
	jpcagt.ini	Service startup initialization file of Remote Monitor Collector (for each instance)[#1]
	jpcagt.ini.model	Model file for the service startup initialization file of Remote Monitor Collector service (for each instance) [#1]
	inssetup.bat	Relay file for internal processing[#1]
	status.dat	Relay file for internal processing[#3]
	pdls_xxxxx_status.db[#4]	Relay file for internal processing[#3]
	pdnl_listener_status.db	Relay file for internal processing[#3]
	pdia_xxxxx_status.db[#4]	Relay file for internal processing[#3]
	targetlist.ini	List of monitoring targets
	GARULES.DAT	Rule file for making group agents
	grouplist.ini	List of group agents
	ocilog.txt	Maintenance information file
installation-folder\agt1\agent\ *instance-name*\groups\	--	Folder for group agent
	groupname.ini	Configuration file for group agent
installation-folder\agt1\agent\ *instance-name*\log\	--	Storage folder for internal log file of the Remote Monitor Collector service (for each instance)[#1]
	agt1inf01.log agt1inf02.log	RM for Oracle agent log file
	agt1err01.log agt1err02.log	RM for Oracle agent log error file
	agt1inf.lck	Relay file for internal processing[#3]

Folder name	File name	Description
installation-folder\agt1\agent\ *instance-name*\log\	agt1err.lck	Relay file for internal processing[#3]
	msglog01 msglog02	Internal log file[#2]
	nslog01 nslog02	Internal log file[#2]
installation-folder\agt1\agent\ *instance-name*\targets\	--	Folder for remote agent
	Monitoring-target-name.ini	Configuration file for monitoring target
	Monitoring-target-name.ini.model	Model configuration file for monitoring target
installation-folder\agt1\lib\	--	Message catalog installation folder
	jpcagt1msg.dll	Message file
installation-folder\agt1\store\	--	Base folder of Remote Monitor Store service
	jpcsto.ini.instmpl	Remote Monitor Store service startup initialization template file
	stolist.ini	List of stores
	*.DAT[#4]	Data model definition file
installation-folder\agt1\store\ *instance-name*\	--	Base folder of Remote Monitor Store service (for each instance)[#1]
	*.DB[#4]	Performance data file (for each instance)[#2]
	*.IDX[#4]	Performance data index file (for each instance)[#2]
	*.LCK[#4]	Performance data lock file (for each instance)[#2]
	jpcsto.ini	Remote Monitor Store (for each instance)[#1]
	jpcsto.ini.model	Model file for the service startup initialization file of Remote Monitor Store (for each instance)[#1]
	*.DAT[#4]	Data model definition file (for each instance)[#1]
	status.dat	Relay file for internal processing[#3]
installation-folder\agt1\store\ *instance-name*\backup\	--	Default database backup destination folder (for each instance)[#1]
installation-folder\agt1\store*instance-name*\partial\	--	Partial backup destination folder for standard databases (per instance)[#1]
installation-folder\agt1\store\ *instance-name*\dump\	--	Default database export destination folder (for each instance)[#1]
installation-folder\agt1\store*instance-name*\import\	--	Database import destination folder for standard databases (per instance)[#1]
installation-folder\agt1\store\ *instance-name*\log\	--	Storage folder for internal log file of Remote Monitor Store service (for each instance)[#1]
	msglog01 msglog02	Internal log file[#2]

Folder name	File name	Description
installation-folder\agt1\store\ *instance-name* \log\	nslog01 nslog02	Internal log file[#2]
installation-folder\agt1\store*instance-name* \STPD\	--	PD database-specific folder
installation-folder\agt1\store*instance-name* \STPI\	--	PI database-specific folder
	STPIopn	Relay file for internal processing
installation-folder\auditlog\	--	Action log file output folder
	jpcaudit*n*.log[#5]	Action log file
installation-folder\patch_files\agt1\	--	Folder for storing batch files (for agents)
installation-folder\setup\	--	Setup file storage folder
	jpcagt1u.Z	Archive file for PFM - RM for Oracle setup (UNIX)
	jpcagt1w.EXE	Archive file for PFM - RM for Oracle setup (Windows)

Legend:

--: Not applicable

#1

Created by execution of the `jpcconf inst setup` command.

#2

Created when the Remote Monitor Store service is started.

#3

This may be temporarily created.

#4

Any string may be used in place of `xxxxx` and `*`.

#5

n is numeric value. The number of log files can be changed in the `jpccomm.ini` file.

(2) UNIX

The following table lists the files and directories for the UNIX version of PFM - RM for Oracle.

Notes

- If you change the file permission, the product will no longer operate normally. Do not change the file permission.
- If you change the `umask` setting, the file permission might be changed during operation. Do not change the `umask` setting.

Table G–2: List of files and directories for PFM - RM for Oracle (UNIX version)

Directory name	File name	Permission	Description
/opt/jp1pc/	instagt1.ini	644	Relay file for internal processing
/opt/jp1pc/agt1/	--	755	Base directory of PFM - RM for Oracle
	jpcagtras	555	Maintenance information collection program

Directory name	File name	Permission	Description
/opt/jp1pc/agt1/	insrules.dat	640	Instance startup environment rule definition file
	PATCHLOG.TXT	644	Relay file for internal processing
	patch_history	644	Relay file for internal processing
	multilingual.dat	444	Maintenance data file
/opt/jp1pc/agt1/agent/	--	755	Base directory of Remote Monitor Collector service
	jpcagt1	555	Service executing program of Remote Monitor Collector
	jpc1collect_10	555	Performance data collection program of Remote Monitor Collector service (for Oracle11g or later)
	agtlist.ini	644	List of instances
	inssetup.instmpl	755	Relay file for internal processing
	jpcagt.ini.instmpl	444	Remote Monitor Collector service startup initialization template file
	target.ini.tmpl	444	Configuration template file for monitoring targets
	sqlgroup.ini.tmpl	444	Configuration template file for group agents
	targetrules.dat	600	Rule file for making monitoring targets
	GARULES.DAT	444	Rule file for making group agents
/opt/jp1pc/agt1/agent/sql/	--	755	SQL SCRIPT STORAGE DIRECTORY
	sp_rdrp.sql	555	SQL script file for deleting an Oracle Database object
	sp_rist.sql	555	SQL script file for registering an Oracle Database object
	mk_rmus.sql	555	Script file for creating an Oracle account used by PFM - RM for Oracle
/opt/jp1pc/agt1/agent/*instance-name*/	--	755	Base directory of Remote Monitor Collector service (for each instance)[#1]
	COSLMMI.DB	644	Data file for the JP1/SLM linkage setting
	COSLMMI.IDX	644	Index file for the data file for the JP1/SLM linkage setting
	COSLMMI.LCK	644	Lock file for the data file for the JP1/SLM linkage setting
	jpcagt.ini	600	Remote Monitor Collector service startup initialization file (for each instance)[#1]
	jpcagt.ini.lck	777	Remote Monitor Collector service startup initialization file lock file (for each instance)[#2]

Directory name	File name	Permission	Description
/opt/jp1pc/agt1/agent/*instance-name*/	jpcagt.ini.model	444	Model file for the service startup initialization file of Remote Monitor Collector (for each instance)[#1]
	inssetup	755	Relay file for internal processing
	status.dat	600	Relay file for internal processing[#3]
	FILEMAP_xxxxx[#4]	666	Relay file for internal processing[#5]
	pdia_xxxxx_status.db[#4]	--[#6]	Relay file for internal processing[#3]
	targetlist.ini	644	List of monitoring targets
	targetlist.ini.lck	777	Lock file for list of monitoring targets
	grouplist.ini	644	List of group agents
	grouplist.ini.lck	777	Lock file for list of group agents
	ocilog.txt	666	Maintenance information file
	db_host_name_db	--[#6]	Relay file for internal processing
/opt/jp1pc/agt1/agent/*instance-name*/groups/	--	755	Directory for group agent
	groupname.ini	600	Configuration file for group agent
	groupname.ini.lck	777	Lock file for configuration file for group agent
/opt/jp1pc/agt1/agent/*instance-name*/log/	--	777	Storage folder for internal log file of Remote Monitor Collector service (for each instance)[#1]
	agt1inf01.log agt1inf02.log	644	RM for Oracle agent log file[#2]
	agt1err01.log agt1err02.log	644	RM for Oracle agent log error file[#2]
	agt1inf.lck	644	Relay file for internal processing[#3]
	agt1err.lck	644	Relay file for internal processing[#3]
	msglog01 msglog02	666	Internal log file[#5]
	nslog01 nslog02	666	Internal log file[#5]
/opt/jp1pc/agt1/agent/*instance-name*/targets/	--	755	Directory for remote agent
	monitoring target name.ini	600	Configuration file for monitoring target
	monitoring target name.ini.model	600	Model configuration file for monitoring target
	monitoring target name.ini.lck	777	Lock file for configuration file for monitoring target
/opt/jp1pc/agt1/nls/	--	755	Message catalog installation directory For details about the files and directories in this directory, see *G.2 List of files and*

Directory name	File name	Permission	Description
/opt/jp1pc/agt1/nls/	--	755	*directories in the message catalog storage directory*.
/opt/jp1pc/agt1/store/	--	755	Base directory of Remote Monitor Store service
	jpcsto.ini.instmpl	444	Remote Monitor Store service startup initialization template file
	stolist.ini	644	List of stores
	*.DAT[#4]	444	Data model definition file
/opt/jp1pc/agt1/store/*instance-name*/	--	755	Base directory of Remote Monitor Store service (for each instance)[#1]
	*.DB[#4]	644	Performance data file (for each instance)[#5]
	*.IDX[#4]	644	Performance data index file (for each instance)[#5]
	*.LCK[#4]	666	Performance data lock file (for each instance)[#5]
	jpcsto.ini	644	Remote Monitor Store service startup initialization file (for each instance)[#1]
	jpcsto.ini.model	444	Model file for the service startup initialization file of Remote Monitor Store service (for each instance)[#1]
	*.DAT[#4]	444	Data model definition file (for each instance)[#1]
	status.dat	600	Relay file for internal processing[#4]
/opt/jp1pc/agt1/store/*instance-name*/backup/	--	755	Default database backup destination directory (for each instance)[#1]
/opt/jp1pc/agt1/store/*instance-name*/partial/	--	755	Partial backup destination directory for standard databases (per instance)[#1]
/opt/jp1pc/agt1/store/*instance-name*/dump/	--	777	Default database export destination folder (for each instance)[#1]
/opt/jp1pc/agt1/store/*instance-name*/import/	--	755	Database import destination directory for standard databases (per instance)[#1]
/opt/jp1pc/agt1/store/*instance-name*/STPD/	--	755	PD database-specific directory
/opt/jp1pc/agt1/store/*instance-name*/STPI/	--	755	PI database-specific directory
/opt/jp1pc/agt1/store/*instance-name*/log/	--	777	Storage directory for internal log file of Remote Monitor Store service (for each instance)[#1]
	msglog01 msglog02	666	Internal log file[#5]
	nslog01 nslog02	666	Internal log file[#5]

Directory name	File name	Permission	Description
/opt/jp1pc/patch_files/agt1	--	755	Folder for storing batch files (for agents)
/opt/jp1pc/auditlog/	--	700	Action log file output directory
	jpcaudit*n*.log[#7]	600	Action log file
/opt/jp1pc/setup/	--	755	Setup file storage directory
	jpcagt1u.Z	444	PFM - RM for Oracle setup archive file (UNIX)
	jpcagt1w.EXE	444	PFM - RM for Oracle setup archive file (Windows)
/opt/jp1pc/tools/log/	agt1_sp_rist.log	644[#8]	Internal log file[#9]
	agt1_mk_rmus.log	644[#8]	Internal log file[#10]

Legend:

--: Not applicable

#1

Created by execution of the `jpcconf inst setup` command.

#2

Do not change or delete this file. This file is used internally by PFM - RM for Oracle.

#3

This may be temporarily created.

#4

Any string may be used in place of xxxxx and *.

#5

Created when the Remote Monitor Store service is started.

#6

No file permissions are specified, because this is a temporary file.

#7

n is numeric value. The number of log files can be changed in the `jpccomm.ini` file.

#8

This depends on the application executing the script (such as Sql*Plus).

#9

This is created when the `sp_rist.sql` script is executed.

#10

This is created when the `mk_rmus.sql` script is executed.

G.2 List of files and directories in the message catalog storage directory

The following explains the configuration of the files and directories in the message catalog storage directory (`/opt/jp1pc/agt1/nls/`).

(1) Linux

The following table lists the files and directories in the message catalog storage directory for the Linux version of PFM - RM for Oracle.

Table G–3: List of files and directories in the message catalog storage directory for PFM - RM for Oracle (Linux version)

File or directory name	Permission	Description
/opt/jp1pc/agt1/nls/C/	755	LANG=C message catalog storage directory
/opt/jp1pc/agt1/nls/C/jpcagt1msg.cat	444	LANG=C message catalog
/opt/jp1pc/agt1/nls/ja_JP.UTF-8/	755	UTF-8 message catalog storage directory
/opt/jp1pc/agt1/nls/ja_JP.UTF-8/jpcagt1msg.cat	444	UTF-8 message catalog
/opt/jp1pc/agt1/nls/ja_JP.eucJP/	755	EUC message catalog storage directory
/opt/jp1pc/agt1/nls/ja_JP.eucJP/jpcagt1msg.cat	444	EUC message catalog
/opt/jp1pc/agt1/nls/ja_JP.ujis	777	Symbolic link to EUC message catalog storage directory
/opt/jp1pc/agt1/nls/ja_JP.utf8	777	Symbolic link to UTF-8 message catalog storage directory
/opt/jp1pc/agt1/nls/ja_JP.SJIS	755	Message catalog storage directory for SJIS
/opt/jp1pc/agto/nls/ja_JP.sjis	777	Symbolic link to the message catalog storage directory for SJIS
/opt/jp1pc/agt1/nls/ja_JP.SJIS/jpcagtomsg.cat	444	Message catalog for SJIS

H. Migration Procedure and Notes on Migration

To upgrade PFM - RM for Oracle, you need to perform overwrite installation on PFM - RM for Oracle. For details about the installation procedure, see the following chapters.

In Windows:

See *2.1 Installation and setup (Windows)*.

In UNIX:

See *2.2 Installation and setup (UNIX)*.

For details about notes on upgrading the versions of Performance Management programs, see the section describing the notes on version upgrading in the chapter and appendix that explain installation and setup in the *JP1/Performance Management Planning and Configuration Guide*.

This appendix shows the notes on upgrading the version of PFM - RM for Oracle.

- Do not uninstall the old version of PFM - RM for Oracle during upgrading. If you uninstall it, performance data created in the old version is deleted and will no longer be available in the new version.
- When you perform overwrite installation on a PFM - RM for Oracle program, the following information is updated automatically:
  - Store database files of Remote Monitor Store service
  - `ini` file
  - Instance environment of PFM - RM for Oracle
- After you have installed PFM - RM for Oracle as an overwrite installation, be careful when you perform the setup procedures described in *Create an Oracle account to be used in PFM - RM for Oracle*. You need to perform that procedure only when the Oracle account being used has been changed or deleted.
- PFM - RM for Oracle version 10-50 or earlier used Oracle Client 32-bit to monitor Oracle Database 11g R2 or later in a 64-bit Windows environment or in a Linux (x64) environment. PFM - RM for Oracle version 11-00 or later uses Oracle Client 64-bit for monitoring. Therefore, you must perform the following tasks when upgrading PFM - RM for Oracle 10-50 or earlier to 11-00 or later:
  - Installing and setting up Oracle Client 64-bit

    Install and set up Oracle Client 64-bit so that it can connect to the Oracle Database. At this time, select *Administrator* or *Runtime* as the installation type for Oracle Client. Instant Client is not supported.
  - Updating instance information

    Update the instance information as shown below.

    Table H–1: Items in instance information

Item	PFM - RM for Oracle	
	10-50 or earlier	11-00 or later
`oracle_home`	Specify the Oracle home folder for Oracle Client 32-bit.	Specify the Oracle home folder for Oracle Client 64-bit.
`oracle_version`	Specify the version of Oracle Client 32-bit.	Specify the version of Oracle Client 64-bit. When monitoring target is Oracle Database 12c or later (about Oracle Database 18c), `12` is set.
`net_service_name`	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 32-bit.	Specify the net service name that can be used to connect to the monitoring-target Oracle Database specified in Oracle Client 64-bit.

Note

Oracle Client 32-bit, which was used for monitoring in version 10-50 or earlier, is not needed and can therefore be uninstalled if it is not used by any program other than PFM - RM for Oracle.

I. Precautions Regarding Permissions

The permissions needed for using PFM - RM for Oracle differ depending on what is being used.

The following lists the permissions required for each operation target.

I.1 When the sp_rist.sql script is executed

The following table lists the system privileges needed for the Oracle account executing the `sp_rist.sql` script.

Table I–1: Oracle account privileges needed to execute the sp_rist.sql script

Privileges required	Description
`CREATE SESSION`	Required when a session is established for the monitored Oracle Database.
`CREATE TABLE`	Required when a table[#1] required to monitor the monitored Oracle Database is registered.
`CREATE PROCEDURE`	Required when a procedure[#1] required to monitor the monitored Oracle Database is registered.
`SELECT ANY DICTIONARY`	Required when information[#1] required to monitor the monitored Oracle Database is registered.
`UNLIMITED TABLESPACE`	Required when information[#1] required to monitor the monitored Oracle Database is registered[#2].

#1

See the following tables.

In Windows

In *2.1.4(3)(c) Registering objects in the Oracle Database*, see *Table 2-11*

In UNIX

In *2.2.4(4)(c) Registering objects in the Oracle Database*, see *Table 2-24*

For details about the `CREATE TABLE` privilege, see *Table 2-11* or *Table 2-24*. For details about the `CREATE PROCEDURE` privilege, see the corresponding package.

#2

This privilege is not needed when the assignment limit that allows writing to the default tablespace of the account used for monitoring has been set.

I.2 When the sp_rdrp.sql script is executed

The following table lists the system privileges needed for the Oracle account executing the `sp_rdrp.sql` script.

Table I–2: Oracle account privileges needed to execute the sp_rdrp.sql script

Privileges required	Description
`CREATE SESSION`	Required when a session is established for the monitored Oracle Database.

I.3 When the mk_rmus.sql script is executed

The following table lists the system privileges needed for the Oracle account executing the `mk_rmus.sql` script.

Table I–3: Oracle account privileges needed to execute the mk_rmus.sql script

Privileges required	Description
`CREATE SESSION`	Required when a session is established for the monitored Oracle Database.
`CREATE USER`	Required when a user is created for the monitored Oracle Database.
`GRANT ANY PRIVILEGE`	Required when system privileges are granted for the monitored Oracle Database.

I.4 When performance information is collected

The following table lists the Oracle account system privileges needed for PFM - RM for Oracle to collect performance information.

Table I–4: Oracle account privileges needed by PFM - RM for Oracle to collect performance information

Privileges required	Description
`CREATE SESSION`	Required when a session is established for the monitored Oracle Database.
`SELECT ANY DICTIONARY`	Required to obtain performance information from the monitored Oracle Database.
`UNLIMITED TABLESPACE`	Required to obtain the Explain Plan field for the `PD_PDSQ` records.#
`SELECT ANY TABLE`	Required to obtain the Explain Plan (`EXPLAIN_PLAN`) field for SQL Text (`PD_PDSQ`) records.
`INSERT ANY TABLE`	Required to obtain the Explain Plan (`EXPLAIN_PLAN`) field for SQL Text (`PD_PDSQ`) records.
`UPDATE ANY TABLE`	Required to obtain the Explain Plan (`EXPLAIN_PLAN`) field for SQL Text (`PD_PDSQ`) records.
`DELETE ANY TABLE`	Required to obtain the Explain Plan (`EXPLAIN_PLAN`) field for SQL Text (`PD_PDSQ`) records.
`CREATE ANY INDEX`	Required to obtain the Explain Plan (`EXPLAIN_PLAN`) field for SQL Text (`PD_PDSQ`) records.
`ALTER ANY INDEX`	Required to obtain the Explain Plan (`EXPLAIN_PLAN`) field for SQL Text (`PD_PDSQ`) records.

#

This privilege is not needed when the assignment limit that allows writing to the default tablespace of the account used for monitoring has been set.

The Oracle user account needs all of the privileges listed in Table I-4 to obtain `PD_PDSQ` records.

When `PD_PDSQ` records are not obtained, the `CREATE SESSION` and `SELECT ANY DICTIONARY` privileges are needed for the Oracle user account.

J. Version Compatibility

For PFM - RM for Oracle, there are different data model versions as well as products.

The data model version remains unchanged. Because data models are upward-compatible, the report and alarm definitions created by an older version are available in a newer data model version.

The table below shows the correspondence between the versions of PFM - RM for Oracle.

Table J–1: Correspondence between PFM - RM for Oracle versions

PFM - RM for Oracle version	Data model version	Version of the monitoring template alarm table
09-00	4.0	09.00
10-00	5.0	10.00
10-50	6.0	10.50
11-00	6.0	10.50
12-00	7.0	12.00
12-10	8.0	12.10

For details about version compatibility, see the information in the appendixes of the *JP1/Performance Management Planning and Configuration Guide*.

K. Outputting Action Log Information

Action log information of Performance Management is output in conjunction with the alarm function related to an exceeded threshold for information, such as system load.

For example, when PFM services start or stop or when the connection status with PFM - Manager changes, action logs are output.

Action logs are output if the version of PFM - Manager or PFM - Base is 08-10 or later.

An action log is a CSV text file. By saving action logs periodically and converting them with spreadsheet software, you can use the action logs as analysis data.

Output of action logs is specified in the `jpccomm.ini` file. This appendix describes the contents of the action log output by PFM - RM for Oracle and PFM - Base, and how to specify the setting for outputting the action log.

K.1 Event types output to the action log

The following table shows the event types output to the action log and the times at which PFM - RM for Oracle and PFM - Base output information to the action log. The event types are the identifiers used within the action log to classify the events output to the action log.

Table K–1: Event types output to the action log

Event type	Explanation	PFM - RM for Oracle and PFM - Base output the action log when:
`StartStop`	Events indicating that software has been started or terminated.	• A PFM service has been started or stopped. • Stand-alone mode has been started or terminated.
`ExternalService`	Events indicating the result of communication between a JP1 product and an external service. This event type also indicates that an abnormal communication has occurred.	The status of a connection with PFM - Manager has changed.
`ManagementAction`	Events indicating that an important program action has been executed. This event type also indicates that the action was executed in response to another audit category.	An automated action is executed.

K.2 Format for saving the action log files

This section explains the format for saving the action log files.

Action log information is output to a specified file (current output file). When the current output file becomes full, the action log information in that file is saved to another file (shift file). The procedure for switching the file for storing action log information is as follows:

1. Action log information is output sequentially to the current output file `jpcaudit.log`.
2. When the current output file becomes full, the action log information is saved in a shift file. The name of a shift file is the current output file name suffixed with a number. Each time the current output file becomes full, each shift file

is renamed by incrementing the suffix by 1. Therefore, the file whose name has the largest number is the oldest log file.

Example:

When the current output file `jpcaudit.log` becomes full, the contents of the file are saved to the shift file `jpcaudit1.log`.

When the current output file becomes full again, the information is moved to `jpcaudit1.log`, and the existing shift file `jpcaudit1.log` is renamed to `jpcaudit2.log`.

Note that when the number of log files exceeds the number of saved log files (specified in the `jpccomm.ini` file), the oldest log file is deleted.

3. The current output file is initialized, and new action log information is written.

Whether action log information is to be output, the output destination, and the number of output files are specified in the `jpccomm.ini` file. For details about how to specify the `jpccomm.ini` file, see *K.4 Settings for outputting action logs*.

K.3 Action log output format

Information related to audit events is output to the Performance Management action log. One action log information file is output for one host (physical host and logical host). The action log file is output to either of the following hosts:

- When a service is executed: The file is output to the host on which the service runs.
- When a command is executed: The file is output to the host on which the command was executed.

The following describes the format of the action log, the output destination, and the items that are output.

(1) Output format

```
CALFHM x.x,output-item-1=value-1,output-item-2=value-2,...,output-item-n=val
ue-n
```

(2) Output destination

On physical hosts

- In Windows
  installation-folder`\auditlog\`
- In UNIX
  `/opt/jp1pc/auditlog/`

On logical hosts

- In Windows
  environment-folder`\jp1pc\auditlog\`
- In UNIX
  environment-directory`/jp1pc/auditlog/`

The action log output destination can be changed in the `jpccomm.ini` file. For details about how to specify the `jpccomm.ini` file, see *K.4 Settings for outputting action logs*.

(3) Output items

There are two types of output items:

- Common output item
  An item that is always output by all JP1 products that output action logs
- Fixed output item
  An item that is optionally output by a JP1 product that outputs action logs

(a) Common output items

The following table lists and describes the common output items and their values. This table also includes the items and information output by PFM - Manager.

Table K–2: Common output items in action logs

No.	Output item		Value	Explanation
	Item name	Output attribute name		
1	Common specification identifier	--	`CALFHM`	Indicates the action log format.
2	Common specification revision number	--	*x.x*	Revision number for managing action logs
3	Serial number	`seqnum`	*serial-number*	Serial number of the action log record
4	Message ID	`msgid`	`KAVE`*xxxxx-x*	Message ID of the product
5	Date and time	`date`	*YYYY-MM-DD*`T`*hh:mm:ss.sss*`TZD`[#]	Date, time, and time zone indication identifying when the action log was output
6	Program name	`progid`	`JP1PFM`	Name of the program for which the event occurred
7	Component name	`compid`	*service-ID*	Name of the component for which the event occurred
8	Process ID	`pid`	*process-ID*	Process ID of the process for which the event occurred
9	Location	`ocp:host`	• *host-name* • *IP-address*	Location where the event occurred
10	Event type	`ctgry`	• `StartStop` • `Authentication` • `ConfigurationAccess` • `ExternalService` • `AnomalyEvent` • `ManagementAction`	Category name used to classify the event output to the action log
11	Event result	`result`	• `Success` • `Failure` • `Occurrence`	Result of the event
12	Subject identification	`subj:pid`	*process-ID*	One of the following:

No.	Output item		Value	Explanation
	Item name	Output attribute name		
12	information	subj:uid	*account-identifier* (PFM user/JP1 user)	• Process ID of a process running as a user operation • Process ID of the process that caused the event • Name of the user who caused the event • Identification information in a one-to-one correspondence with the user
		subj:euid	*effective-user-ID* (OS user)	

Legend:

--: None

#

T is a separator between the date and the time.

TZD is the time zone specifier. One of the following values is output.

+*hh*:*mm*: The time zone is *hh*:*mm* ahead of UTC.

−*hh*:*mm*: The time zone is *hh*:*mm* behind UTC.

z: The time zone is same as UTC.

(b) Fixed output items

The following table lists and describes the fixed output items and their values. This table also includes the items and information output by PFM - Manager.

Table K–3: Fixed output items in action logs

No.	Output item		Value	Explanation
	Item name	Output attribute name		
1	Object information	obj	• *PFM - RM for Oracle-service-ID* • *added-deleted-or-updated-user-name* (PFM user)	Intended object for the operation
		obj:table	*alarm-table-name*	
		obj:alarm	*alarm-name*	
2	Action information	op	• Start • Stop • Add • Update • Delete • Change Password • Activate • Inactivate • Bind • Unbind	Information about the action that caused the event
3	Permissions information	auth	• Administrator Management • General user	Permissions information of the user who executed

No.	Output item		Value	Explanation
	Item name	Output attribute name		
3	Permissions information	auth	Ordinary • Windows Administrator • UNIX SuperUser	the command or service
		auth:mode	• PFM authentication mode pfm • JP1 authentication mode jp1 • OS user os	Authentication mode of the user who executed the command or service
4	Output source	outp:host	*PFM - Manager-host-name*	Host that output the action log
5	Instruction source	subjp:host	• *login-host-name* • *execution-host-name* (only when the jpctool alarm command is executed)	Host that issued the instruction for the operation
6	Free description	msg	*message*	Message that is output when an alarm occurs or when an automated action is executed

Whether the fixed output items are output and what they contain differ depending on when the action log is output. The following describes the message ID and output information for each case.

■ A PFM service is started or stopped (StartStop)

- Output host: The host on which the service is running
- Output component: The service that was started or stopped

When a PFM service is started or stopped (StartStop), the message ID and action information are output. The following table shows the message ID and action information value that is output.

Table K–4: Message ID and action information value output when a PFM service is started or stopped (StartStop)

Item name	Attribute name	Value
Message ID	msgid	Started: KAVE03000-I Stopped: KAVE03001-I
Action information	op	Started: Start Stopped: Stop

■ Stand-alone mode is started or terminated (StartStop)

- Output host: PFM - RM host
- Output component: Remote Monitor Collector service and Remote Monitor Store service

When stand-alone mode is started or stopped (StartStop), the message ID is output. The following table shows the message ID value that is output.

Table K–5: Message ID value output when stand-alone mode is started or stopped (StartStop)

Item name	Attribute name	Value
Message ID	msgid	Stand-alone mode has started: KAVE03002-I Stand-alone mode has terminated: KAVE03003-I

Note:

1. No fixed output items are output.
2. When PFM - RM for Oracle is started, PFM - RM services connect to the PFM - Manager host, register node information, and obtain the latest alarm definition information. If a connection with the PFM - Manager host cannot be established, a PFM - RM service starts in stand-alone mode. In this mode, only part of the service's functionality, such as the collection of operating information, is enabled. At the same time, KAVE03002-I is output to indicate that the service has started in stand-alone mode. When the services are able to successfully register node information or obtain definition information, PFM - RM for Oracle leaves stand-alone mode and KAVE03003-I is output. In this way, the action log enables you to understand that PFM - RM for Oracle was running in an imperfect condition for the period from the output of KAVE03002-I to the output of KAVE03003-I.

■ The status of the connection with PFM - Manager changes (ExternalService)

- Output host: PFM - RM host
- Output component: Remote Monitor Collector service and Remote Monitor Store service

When the status of the connection with PFM - Manager changes (ExternalService), the message ID is output. The following table shows the t message ID value that is output.

Table K–6: Message ID value output when the status of the connection with PFM - Manager changes (ExternalService)

Item name	Attribute name	Value
Message ID	msgid	Sending of an event to PFM - Manager failed (queuing was started): KAVE03300-I An event was resent to PFM - Manager: KAVE03301-I

Note:

1. No fixed output items are output.
2. When sending of an event to PFM - Manager fails, Remote Monitor Store service starts queuing events. The maximum capacity of the queue is 3 events. KAVE03300-I is output when sending of an event to PFM - Manager fails and queuing starts. After the connection with PFM - Manager restores and the queued events are resent, KAVE03301-I is output. From this sequence of the log, you can judge that the period when an event-sending to PFM - Manager is not real time is specifiable.
3. Remote Monitor Collector service normally sends events to PFM - Manager through Remote Monitor Store service. Remote Monitor Collector service directly sends events to PFM - Manager only when Remote Monitor Store Service stops for any reason. When Remote Monitor Collector Service fails to send events directly to PFM - Manager, KAVE03300-I is output. In this case, KAVE03301-I is no output because the queuing does not start. From this sequence of the log, you can judge that there are events that are not sent to PFM - Manager.

■ **An automated action is executed (ManagementAction)**

- Output host: The host on which the action was executed
- Output component: Action Handler service

When an automated action is executed (ManagementAction), the message ID and a free description are output. The following table shows the message ID and free description value that are output.

Table K–7: Message ID and free description value output when an automated action is executed (ManagementAction)

Item name	Attribute name	Value
Message ID	`msgid`	The command execution process was created successfully: `KAVE03500-I`. An attempt to create a command execution process failed: `KAVE03501-W`. E-mail was send successfully: `KAVE03502-I`. Sending of e-mail failed: `KAVE03503-W`
Free description	`msg`	Command execution: `cmd=`*executed-command-line*. E-mail sending: `mailto=`*destination-email-address*.

Note:

KAVE03500-I is output when the command execution process is successfully created. After KAVE03500-I is output, whether the command is successfully executed or not and the execution result are not output to the action log.

(4) Output example

The following is an example of action log output.

```
CALFHM 1.0, seqnum=1, msgid=KAVE03000-I, date=2007-01-18T22:46:49.682+09:00,
progid=JP1PFM, compid=1A1host01, pid=2076,
ocp:host=host01, ctgry=StartStop, result=Occurrence,
subj:pid=2076,op=Start,
```

K.4 Settings for outputting action logs

The settings for outputting action logs are defined in the `jpccomm.ini` file. If no settings are specified, no action logs are output. The following describes the settings required to output the action logs, and how to specify the settings.

(1) Setting procedure

To specify the settings for outputting action log information:

1. Stop all PFM services on the host.
2. Using a text editor, edit the `jpccomm.ini` file.
3. Save and close the `jpccomm.ini` file.

(2) Details about the jpccomm.ini file

The following describes the `jpccomm.ini` file in detail.

(a) Storage directory

In Windows

installation-folder

In UNIX

`/opt/jp1pc/`

(b) Format

In the `jpccomm.ini` file, define the following information:

- Whether or not to output action log information
- Output destination of the action log
- Number of action logs that can be saved
- File size of the action log

The specification format is as follows:

"*item-name*"=*value*

The following table shows the items that you specify.

Table K–8: Items specified in the jpccomm.ini file and their initial values

No.	Item	Explanation
1	`[Action Log Section]`	The section name, which cannot be changed.
2	`Action Log Mode`	Specify whether or not to output action log information. You must specify this item. • Initial value 0 (Information not output) • Specifiable value 0 (Information not output) or 1 (Information output) If any other value is specified, an error message is output and action log information will not be output.
3	`Action Log Dir`#	Specify the action log output destination. In a logical host environment, specify a directory on the shared disk. If the directory you specify is not on the shared disk, Performance Management will output action logs to each physical host that forms the basis for the logical host. If a path longer than the limit is specified or if access to the directory fails, an error message is output to the command log and action log information will not be output. • Initial value None set • Default value used when no specification is made On physical hosts: Windows: *installation-folder*`\auditlog\` UNIX: `/opt/jp1pc/auditlog/` On logical hosts: Windows: *environment-folder*`\jp1pc\auditlog\` UNIX: *environment-directory*`/jp1pc/auditlog/` • Specifiable value A character string of 1 to 185 bytes

No.	Item	Explanation
4	`Action Log Num`	Specify the upper limit on the total number of log files (number of saved files). Specify the sum of the number of current output file and shift files. • Initial value None set • Default value used when no specification is made: 5 • Specifiable value An integer in the range from 2 to 10 If a character string containing a non-numeric value is specified, an error message is output and the default value 5 is set. If a numeric value outside the valid range is specified, an error message is output and an integer nearest the specified value in the range from 2 to 10 is set.
5	`Action Log Size`	Specify the log file size in kilobytes. • Initial value None set • Default value used when no specification is made: 2048 • Specifiable value An integer in the range from 512 to 2096128 If a character string containing a non-numeric value is specified, an error message is output and the default value 2048 is set. If a numeric value outside the valid range is specified, an error message is output and an integer nearest the specified value in the range from 512 to 2096128 is set.

#

When you use the `jpcconf ha setup` command to set up a logical host after you configure action log output on the physical host, the settings in the jpccomm.ini file of the physical host apply to the logical host. When using Performance Management on a logical host and a physical host at the same time, make sure that both hosts do not output action logs to the same directory.

L. Linking with JP1/SLM

The capability of PFM - RM for Oracle to monitor operating status can be enhanced through linkage with JP1/SLM.

PFM - RM for Oracle provides default monitoring items specific to JP1/SLM for PFM - Manager to enable monitoring on JP1/SLM.

The default monitoring items provided by PFM - RM for Oracle for PFM - Manager are described in the following table.

In addition, PFM - RM for Oracle collects records corresponding to the value specified as the key for multi-instance records. For the corresponding collection key, see the collection result for each record.

Table L–1: Default monitoring items provided by PFM - RM for Oracle for PFM - Manager

Display name in JP1/SLM	Description	Record (Record ID)	Key (PFM-Manager name)	Field name
Cache miss rate	Monitors the percentage of data requests issued due to cache misses.	System Stat Summary Interval (PI)	--	DICTIONARY_CACHE_GET_MISSES_PERCENTAGE
Disk sorts execution rate	Monitors the percentage of all sorts executed on the disk when memory or disk I/O is used.	System Stat Summary Interval (PI)	--	SORT_OVERFLOW_PERCENTAGE
Buffer cache usage rate	Monitors buffer and cache usage.	System Stat Summary Interval (PI)	--	CACHE_HIT_PERCENTAGE
Buffer busy rate	Monitors the percentage of rollback or data conflicts in a database.	System Stat Summary Interval (PI)	--	BUFFER_BUSY_WAIT_PERCENTAGE
Library cache miss rate	Monitors the percentage of the objects in the library cache that are reloaded.	System Stat Summary Interval (PI)	--	LIBRARY_CACHE_MISS_PERCENTAGE

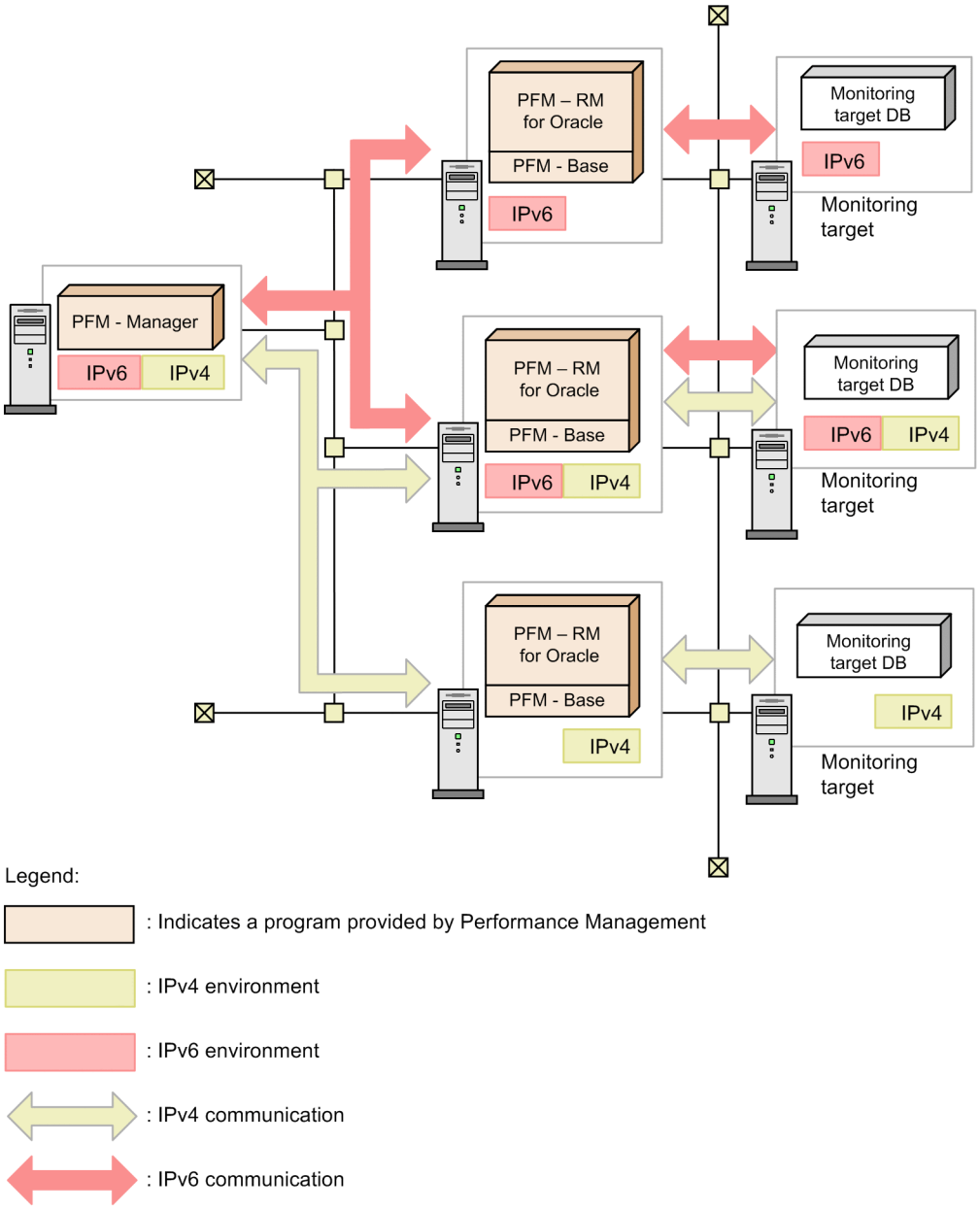
To provide the default monitoring items for PFM - Manager, you need to copy the setup file and execute the setup command. For details, see *2.1.4(1) Register PFM - RM for Oracle (Windows)* or *2.2.4(2) Register PFM - RM for Oracle (UNIX)*.

M. About Communication in IPv4 Environments and IPv6 Environments

Performance Management supports IPv6 environments in addition to IPv4 environments as a network configuration. Therefore, Performance Management can operate even in a network configuration in which both an IPv4 environment and IPv6 environment are used.

Note that this explanation applies only when the OS of a host on which PFM - RM for Oracle and PFM - Manager are installed is Windows or Linux.

Figure M–1: Scope of communication when an IPv4 environment and an IPv6 environment are used



To enable communication in an IPv6 environment, you must execute the `jpcconf ipv6 enable` command. For details about the `jpcconf ipv6 enable` command, see the chapter that describes commands in the manual *JP1/Performance Management Reference*. For the conditions and timing for executing the `jpcconf ipv6 enable` command, see the chapter that describes network configuring examples in an IPv6 environment in the *JP1/Performance Management Planning and Configuration Guide*.

N. Version Revisions

This appendix shows the changes that have been made to each version of the manual.

N.1 Revisions in 12-10

- Changes were made to the procedure for registering PFM - RM for Oracle.
- The version of the data model has been changed from 7.0 to 8.0, and the version of the alarm table has been changed from 12.00 to 12.10.
- The following report was added to monitor the fast recovery area:
  - Fast Recovery Area Status
- A field for monitoring free space available for the disk group was added to the following record:
  - ASM Disk Group Interval (`PI_PIDG`)
- A field for monitoring the fast recovery area was added to the following record:
  - Collection Instance 2 (`PD_PCI`)

N.2 Revisions in 12-00

- Windows Server 2019 was added to the list of OSs that can run PFM - RM for Oracle.
- Oracle Database 19c was added to the list of monitoring target programs.
- Windows Server 2008 R2 was deleted from the OSs on which PFM - RM for Oracle runs.
- Oracle Database 10g was deleted to the list of monitoring target programs.
- Windows Server 2016 was added to the list of OSs that can run PFM - Remote Monitor for Oracle.
- Oracle Database 12c Release 2 was added to the list of monitoring target programs. This enabled PFM - RM for Oracle to operate with a multitenant container database (CDB) configuration.
- The version of the data model has been changed from 6.0 to 7.0, and the version of the alarm table has been changed from 10.50 to 12.00.
- With the change of data model, the versions of the following reports that use fields for which the type of their data model was changed in version 7.0 or that refer to such reports were changed:
  - Blocking Locks
  - Disk Sorts - Top 10 Sessions
  - I/O Activity - Top 10 Datafiles
  - Lock Usage - Top 10 Sessions
  - Locked Objects
  - Longest Transactions - Top 10 Sessions
  - Memory Usage - Top 10 Sessions
  - Physical I/O - Top 10 Sessions
  - Session Detail
  - SGA Status

    - SGA Status Summary
    - System Overview
- The sizes of the following records were changed:
    - Session Detail (PD_PDS)
    - SGA Components (PD_PDSG)
- Fields were added to the following records:
    - Session Detail (PD_PDS)
    - SGA Components (PD_PDSG)
- A description about effects of the values of the following instance information was added to the Tablespace (PD_PDTS) record:
    - localtemp_option
    - undospace_option

N.3 Revisions in 11-00

- Windows Server 2003 was deleted from the OSs on which PFM - RM for Oracle runs.
- A Linux distribution on which PFM - RM for Oracle runs was added.
- The prerequisite product was changed from Oracle Client 32-bit to Oracle Client 64-bit.
- The default value of undospace_option in instance information was changed.
- The size (unit: bytes) of the following fields in which the last character might be unreadable was changed:
    - File Name field of the Data File (PD_PDDF) record
    - File Name field of the Data File Interval (PI_PIDF) record
    - Host field of the Instance (PD_PDI) record
- The following languages can now be used with Performance Management:
    - Korean
    - Spanish
    - German
    - French
    - Russian
- Monitoring Console Https is now included as one of the Remote Collector service properties.
- The product name was changed from PFM - Agent for OpenTP1 to PFM - Agent for Transaction System.
- The product name was changed from JP1/ITSLM to JP1/SLM.

N.4 Revisions in 10-50

- The following ASM-related records were added:
    - ASM Disk (PD_PDDK)

    - ASM Disk Group Interval (PI_PIDG)
- The following fields associated with automatic expansion were added to the tablespace (PD_PDTS) record:
    - Auto Extensible
    - Extensible Mbytes
    - Extensible Mbytes %
    - Max Extend Free %
    - Max Extend Free Mbytes
    - Max Extend Mbytes
- The following fields associated with the Redo log buffer busy wait rate were added to the System Stat Summary (PD) record and the System Stat Summary Interval (PI) record:
    - Redo Log Buffer Alloc Retries
    - Redo Log Buffer Wait %
- The `Over 10 Sec Collection Time` property was added as a condition for collecting performance data for each record.
- The `Realtime Report Data Collection Mode` property was added to prioritize the collection of historical data over the display processing of real-time reports.
- The data model version was changed from 5.0 to 6.0 and the alarm table version was changed from 10.00 to 10.50.

N.5 Revisions in 10-00

- Windows Server 2012 was added to the list of OSs that can run PFM - Remote Monitor for Oracle.
- The non-CDB environment for Oracle Database 12c Release 1 was added to the list of programs that can be monitored.
- Information about monitoring items for monitoring services through linkage with JP1/IT Service Level Management has been added. In addition, information about the following monitoring items has been added:
    - Cache miss rate
    - Disk sorts execution rate
    - Buffer cache usage rate
    - Buffer busy rate
    - Library cache miss rate
- The collection of performance data is now supported in an IPv6 environment if the OS of the host on which PFM - RM for Oracle is installed is Windows Server 2008 R2, Windows Server 2012, or Linux.
- Shift JIS is now supported in Japanese Windows environments and GB18030 is now supported in Simplified Chinese Windows environments.
- UTF-8 and GB18030 are supported in a Linux environment.
- An option for switching UNDO tablespace monitoring has been added.
- The `Pool` field has been added to the SGA Components (`PD_PDSG`) record.
- The version of the data model has been changed from 4.0 to 5.0, and the version of the alarm table has been changed from 09.00 to 10.00.

O. Reference Material for This Manual

This appendix provides reference information, including various conventions, for this manual.

O.1 Related publications

This manual is part of a related set of manuals. The manuals in the set are listed below (with the manual numbers):

Manuals associated with JP1/Performance Management:

- *JP1 Version 12 Performance Management: Getting Started* (3021-3-D75(E))
- *JP1/Performance Management Planning and Configuration Guide* (3021-3-D76(E))
- *JP1/Performance Management User's Guide* (3021-3-D77(E))
- *JP1/Performance Management Reference* (3021-3-D78(E))

Manuals associated with JP1:

- *Job Management Partner 1/Software Distribution Administrator's Guide Volume 1* (3020-3-S81(E)), for Windows systems
- *Job Management Partner 1/Software Distribution Manager Description and Administrator's Guide* (3000-3-841(E))
- *Job Management Partner 1/Software Distribution SubManager Description and Administrator's Guide* (3020-3-L42(E)), for UNIX systems
- *Job Management Partner 1/Software Distribution Client Description and User's Guide* (3020-3-S85(E)), for UNIX systems

O.2 Conventions: Abbreviations for product names

This manual uses the following abbreviations for product names:

Abbreviation		Full name or meaning
HP-UX	HP-UX 11i	HP-UX 11i V3 (IPF)
IPF		Itanium(R) Processor Family
JP1/IM	JP1/IM - Manager	JP1/Integrated Management - Manager
		JP1/Integrated Management 2 - Manager
	JP1/IM - View	JP1/Integrated Management - View
		JP1/Integrated Management 2 - View
JP1/ITSLM (10-50 and earlier)	JP1/ITSLM - Manager	JP1/IT Service Level Management - Manager
	JP1/ITSLM - UR	JP1/IT Service Level Management - User Response
JP1/SLM	JP1/SLM - Manager	JP1/Service Level Management - Manager
	JP1/SLM - UR	JP1/Service Level Management - User Response
JP1/Software Distribution		Job Management Partner 1/Software Distribution Client

Abbreviation			Full name or meaning
JP1/Software Distribution			Job Management Partner 1/Software Distribution Manager
			JP1/Software Distribution SubManager
Linux	CentOS	CentOS 6 (x64)	CentOS 6.1 (x64) or later
		CentOS 7	CentOS 7.1 or later
	Linux 6 (x64)		Red Hat Enterprise Linux(R) Server 6.1 (64-bit x86_64) or later
	Linux 7		Red Hat Enterprise Linux(R) Server 7.1 or later
	Oracle Linux	Oracle Linux 6 (x64)	Oracle Linux(R) Operating System 6.1 (x64) or later
		Oracle Linux 7	Oracle Linux(R) Operating System 7.1 or later
	SUSE Linux	SUSE Linux 12	SUSE Linux(R) Enterprise Server 12
		SUSE Linux 15	SUSE Linux(R) Enterprise Server 15
Oracle	Oracle10g		Oracle Database 10g
	Oracle11g		Oracle Database 11g
	Oracle12c		Oracle Database 12c
	Oracle18c		Oracle Database 18c
	Oracle19c		Oracle Database 19c
Performance Management			JP1/Performance Management
PFM - Agent	PFM - Agent for Cosminexus#		JP1/Performance Management - Agent Option for uCosminexus Application Server
	PFM - Agent for DB2		JP1/Performance Management - Agent Option for IBM DB2
	PFM - Agent for Domino		JP1/Performance Management - Agent Option for IBM Lotus Domino
	PFM - Agent for Enterprise Applications		JP1/Performance Management - Agent Option for Enterprise Applications
	PFM - Agent for Exchange Server#		JP1/Performance Management - Agent Option for Microsoft(R) Exchange Server
	PFM - Agent for HiRDB#		JP1/Performance Management - Agent Option for HiRDB
	PFM - Agent for IIS#		JP1/Performance Management - Agent Option for Microsoft(R) Internet Information Server
	PFM - Agent for JP1/AJS#	PFM - Agent for JP1/AJS2	JP1/Performance Management - Agent Option for JP1/AJS2
		PFM - Agent for JP1/AJS3	JP1/Performance Management - Agent Option for JP1/AJS3
	PFM - Agent for Microsoft SQL Server		JP1/Performance Management - Agent Option for Microsoft(R) SQL Server
	PFM - Agent for Oracle		JP1/Performance Management - Agent Option for Oracle

Abbreviation			Full name or meaning
PFM - Agent	PFM - Agent for Platform	PFM - Agent for Platform(UNIX)	JP1/Performance Management - Agent Option for Platform (UNIX)
		PFM - Agent for Platform(Windows)	JP1/Performance Management - Agent Option for Platform (Windows)
	PFM - Agent for Service Response		JP1/Performance Management - Agent Option for Service Response
	PFM - Agent for Transaction System#		JP1/Performance Management - Agent Option for Transaction System
	PFM - Agent for WebLogic Server#		JP1/Performance Management - Agent Option for BEA WebLogic Server
			JP1/Performance Management - Agent Option for Oracle(R) WebLogic Server
	PFM - Agent for WebSphere Application Server#		JP1/Performance Management - Agent Option for IBM WebSphere Application Server
	PFM - Agent for WebSphere MQ#		JP1/Performance Management - Agent Option for IBM WebSphere MQ
PFM - Base			JP1/Performance Management - Base
PFM - Manager			JP1/Performance Management - Manager
PFM - RM	PFM - RM for Microsoft SQL Server		JP1/Performance Management - Remote Monitor for Microsoft(R) SQL Server
	PFM - RM for Oracle		JP1/Performance Management - Remote Monitor for Oracle
	PFM - RM for Platform	PFM - RM for Platform(UNIX)	JP1/Performance Management - Remote Monitor for Platform (UNIX)
		PFM - RM for Platform(Windows)	JP1/Performance Management - Remote Monitor for Platform (Windows)
	PFM - RM for Virtual Machine		JP1/Performance Management - Remote Monitor for Virtual Machine
PFM - Web Console			JP1/Performance Management - Web Console
Solaris	Solaris 11		Solaris 11 (SPARC)

- PFM - Manager, PFM - Agent, PFM - Base, PFM - Web Console, and PFM - RM may be referred to collectively as *Performance Management*.
- HP-UX, Solaris, AIX, and Linux may be referred to collectively as *UNIX*.

#

This product only runs in a Japanese environment.

O.3 Conventions: Acronyms

This manual also uses the following acronyms:

Acronym	Full name or meaning
ASM	Automatic Storage Management
CPU	Central Processing Unit

Acronym	Full name or meaning
CSV	Comma-Separated Values
DDL	Data Define Language
DHCP	Dynamic Host Configuration Protocol
DML	Data Manipulation Language
EUC	Extended UNIX Code
GIF	Graphics Interchange Format
GUI	Graphical User Interface
HTML	HyperText Markup Language
HTTP	HyperText Transfer Protocol
IPv4	Internet Protocol Version 4
IPv6	Internet Protocol Version 6
LAN	Local Area Network
NAPT	Network Address Port Translation
NAT	Network Address Translation
ODBC	Open DataBase Connectivity
OS	Operating System
SNMP	Simple Network Management Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
UAC	User Account Control
UTC	Coordinated Universal Time
UTF-8	Unicode Transformation Format-8
WOW64	Windows-On-Windows 64

O.4 Conventions: Product names, service IDs, and service keys

Performance Management version 09-00 or later can display the product name as the service ID and service key by enabling the product name display functionality.

Identifiers	Product name display functionality	
	Disabled	Enabled
Service ID	1S1 hostname	hostname <RMOracle>(Store)
	1A1 hostname	hostname <RMOracle>
Service Key	agt1	RMOracle

Hereafter in this manual, service IDs and service keys are shown in the format when the product name display functionality is enabled.

Note that you can enable the product name display functionality only when you satisfy the two conditions listed below:

- The version number of the prerequisite programs (PFM - Manager or PFM - Base) is 09-00 or later.
- The version number of PFM - Web Console and connection-target PFM - Manager is 09-00 or later.

O.5 Conventions: Directory names

In general, if a Windows folder name is the same as its counterpart UNIX directory name, it is referred to in this manual by its UNIX directory name.

O.6 Conventions: Installation folder

In this manual, the installation folder for the Windows version of Performance Management is indicated by *installation-folder*. The installation directory for the UNIX version of Performance Management is indicated by *installation-directory*.

The default installation folder for the Windows version of Performance Management is as follows:

- Default installation folder for PFM - Base:

  ```
  system-drive\Program Files(x86)\Hitachi\jp1pc
  ```

  Note

  This manual uses the term *installation-folder* for the PFM - Base installation folder.
- Default installation folder for PFM - Management:

  ```
  system-drive\Program Files(x86)\Hitachi\jp1pc
  ```
- Default installation folder for PFM - Web Console:

  ```
  system-drive\Program Files(x86)\Hitachi\jp1pcWebCon
  ```

The default installation directory for the UNIX version of Performance Management is as follows:

- Default installation directory for PFM - Base:

  ```
  /opt/jp1pc
  ```
- Default installation directory for PFM - Manager:

  ```
  /opt/jp1pc
  ```
- Default installation directory for PFM - Web Console:

  ```
  /opt/jp1pcwebcon
  ```

O.7 Conventions: KB, MB, GB, and TB

This manual uses the following conventions:

- 1 KB (kilobyte) is 1,024 bytes.

- 1 MB (megabyte) is $1{,}024^2$ bytes.
- 1 GB (gigabyte) is $1{,}024^3$ bytes.
- 1 TB (terabyte) is $1{,}024^4$ bytes.

P. Glossary

action

An action executed automatically by Performance Management when the data being monitored reaches a threshold value. The following actions are supported:

- Sending an email
- Executing a command
- Issuing an SNMP trap
- Issuing a JP1 event

Action Handler

A PFM - Manager or PFM - Base service that executes actions.

Agent

A PFM - RM service that collects performance data.

alarm

Information that defines an action or event message that is triggered when the data being monitored reaches a threshold value.

alarm table

A table containing the following definition information about one or more alarms:

- Monitored object (process, TCP, Web service, and so on)
- Monitored information (CPU usage, number of bytes received per second, and so on)
- Monitored condition (threshold value)

binding

The process of associating alarms with an agent. Binding enables the user to be notified when the performance data collected by the agent reaches a threshold value defined in an alarm.

cluster system

A single system configured from multiple linked server systems. There are two major types of cluster systems: an HA (High Availability) cluster system and a load-balancing cluster system.

In this manual, a *cluster system* means an HA cluster system.

→ *HA cluster system*

→ *Load-balancing cluster system*

Correlator

A PFM - Manager service that controls event distribution between services. This service evaluates the alarm status, and sends an alarm event or agent event to the Trap Generator service and to PFM - Web Console if the alarm status exceeds a threshold value.

database ID

An ID attached to each record in PFM - RM, indicating the database in which the record is stored and the record type. The database ID may be either of the following:

- `PI`

  Indicates that the database contains records of the PI record type.

- `PD`

  Indicates that the database contains records of the PD record type.

data model

A generic term for the records and fields contained in a PFM - RM. Data models are versioned.

drilldown report

A report related to another report or to the fields in the report. A drilldown report can be used to display detailed information or related information for a report.

executing node

Of the server systems in a cluster system, the node that is currently executing applications (node whose logical host is active).

failover

The process by which the standby node takes over processing if a failure occurs on the node that is executing applications in a cluster system.

field

Individual operation information entries in a record. Each field serves as a monitoring item for Performance Management.

Function ID

A one-byte identifier indicating the function type of a service of Performance Management programs. This is part of the service ID.

HA cluster system

A cluster system designed to implement high availability by continuing operation even if one system fails. If a failure occurs on the server currently executing applications, a separate standby server takes over and continues the processing of applications. Accordingly, because application processing is not interrupted when a failure occurs, availability improves.

In this manual, a *cluster system* means an HA cluster system.

historical report

A report that tracks the status of an object being monitored from a point in the past to the present.

instance

In this manual, the term *instance* is used as follows.

- To indicate the format of a record:

  A record written on one line is known as a *single-instance record*. A record spanning multiple lines is known as a *multi-instance record*, each line of which is known as an *instance*.

- To indicate the number of PFM - RM:

  A single agent that monitors all the target objects on a host is known as a *single-instance agent*. Agents that share the monitoring of target objects on a host are known collectively as a *multi-instance agent*. Each of these agent services of a multi-instance agent is called an *instance*.

instance number

An identifier for management number used for internal processing. An instance number is part of the service ID.

lifetime

The length of time that the consistency of the performance data collected in each record is retained.

JP1/SLM

A product that performs monitoring from the viewpoint of performance as experienced by the service users of a business system, and that supports service-level maintenance. Linkage with JP1/SLM can enhance monitoring of the operating status.

load-balancing cluster system

A system that distributes the processing load over multiple nodes to improve throughput. Because processing switches to another node if an executing node stops due to a failure, this system also improves the availability of the system.

logical host

A logical server that provides the JP1 execution environment for operation in a cluster system. If a failure occurs on the executing node, the logical host is switched to the standby node. Each logical host has a unique IP address. At failover, the IP address is inherited by the standby node. Thus, when the physical server is failed over, clients can still access the logical host using the same IP address. To the clients, it appears that one server is operating continuously.

management tool

Any command or GUI-based function used to verify the status of a service or to manipulate performance data. Management tools allow you to:

- Display the configuration and status of a service
- Save and restore performance data
- Export performance data to a text file
- Delete performance data

Master Manager

A PFM - Manager service. This is the main service of PFM - Manager.

Master Store

A PFM - Manager service that manages the alarm events issued from each PFM - RM. This service uses a database to store the event data.

monitoring template

A set of predefined alarms and reports provided by PFM - RM. The monitoring template facilitates preparation for monitoring of the PFM - RM operation status without the user having to enter complex definitions.

multi-instance record

A record spanning multiple lines. This type of record has unique ODBC key fields.

→ *instance*

ODBC key field

These fields display the primary keys that are necessary to use the data retrieved from records stored in the Store database on either PFM - Manager or PFM - Base. Some ODBC key fields are common to all records; others are record-specific.

PD record type

→ *Product Detail record type*

performance data

Data about the operation status of a resource, collected from the system being monitored.

Performance Management

A generic term for a family of software products used to monitor and analyze problems related to system performance. Performance Management consists of the following five program products:

- PFM - Manager
- PFM - Web Console
- PFM - Base
- PFM - Agent
- PFM - RM

PFM - Agent

One of the program products in the Performance Management family. PFM - Agent is responsible for system monitoring. Several types of PFM - Agent are available, depending on the applications, database, and OS to be monitored. PFM - Agent provides the following features:

- Performance monitoring of target objects
- Collection and recording of data from monitored objects

PFM - Base

One of the program products in the Performance Management family. PFM - Base provides the core functionality for operation monitoring in Performance Management. It is a prerequisite product for running PFM - Agent and provides the following features:

- Commands and other management tools
- Common functions for linking Performance Management with another system

PFM - Manager

One of the program products in the Performance Management family. PFM - Manager performs supervisory functions and provides the following features:

- Management of the Performance Management program products
- Event management

PFM - Manager name

A field name that identifies the field in the Store database that stores the reference data. Use this name, for example, when you execute any command with the field name in the Store database.

PFM - RM

One of the program products in the Performance Management family. PFM - RM is responsible for system monitoring. Several types of PFM - RM are available, depending on the applications, database, and OS to be monitored. PFM - RM provides the following features:

- Performance monitoring of target objects
- Collection and recording of data from monitored objects

PFM - View name

Alias name for PFM - Manager name. PFM - View name is more intuitive than PFM - Manager name. For example, "INPUT_RECORD_TYPE" (PFM - Manager name) is "Record Type"(PFM - View name). Use this field name, for example, when you specify the field name in the PFM - Web Console windows.

PFM - Web Console

One of the program products in the Performance Management family. PFM - Web Console operates as a Web application server to enable centralized monitoring of the Performance Management system via a browser. It provides the following features:

- Display in a graphical user interface
- Integrated monitoring and management
- Definition of reports and alarms

physical host

An environment unique to each server in a cluster system. When a failover occurs, the environment of the physical host is not inherited by the other server.

PI record type

→ *Product Interval record type*

Product Detail record type

A type of record for storing performance data indicating the system status at a specific point in time, such as detail information about the currently running process. PD records can be used to acquire system statuses such as the following at a specific point in time:

- System operation status
- Amount of file system capacity currently in use

product ID

A one-byte ID indicating the Performance Management program product to which the service of the Performance Management program belongs. A product ID is part of the service ID.

Product Interval record type

A type of record for storing performance data at set intervals, such as a process count every minute. PI records can be used to analyze such time-based changes and trends in the system status such as the following:

- Number of system calls generated within a set time period
- Changes in the amount of file system capacity used

real-time report

A report that shows the current status of an object being monitored.

record

A group of operation information entries categorized by their purpose. A monitoring agent collects operation information from each record. The types of records that can be collected vary depending on the agent program.

report

Information defined for graphical display of the performance data collected by PFM - RM. The main types of information you can define are as follows:

- The records to be displayed in a report
- The performance data items to be displayed
- The display format of performance data (table, graph, and so on)

Remote Monitor Collector

A PFM - RM service that collects performance data and evaluates the data according to the threshold values set in alarms.

Remote Monitor Store

A PFM - RM service that stores performance data in a database. A separate Remote Monitor Store service is provided with each PFM - Remote Monitor platform.

service ID

A unique ID assigned to each service of the Performance Management programs. You must specify the service ID when you execute a command to check the Performance Management system configuration or to back up performance data of an agent, for example. The format of the service ID differs depending on the setting of the product name display functionality. For details about the format of the service ID, see the chapter on Performance Management functionalities in the *JP1/Performance Management Planning and Configuration Guide*.

single-instance record

A record written on a single line. This type of record does not have any unique ODBC key fields.

→ *instance*

stand-alone mode

A PFM - RM activated as a stand-alone program. If either of the PFM - Manager services Master Manager or Name Server is disabled due to a failure or another problem, you can still collect performance data by starting PFM - RM.

standby node

Of the server systems in a cluster system, a node that is waiting to take over applications if the executing node fails.

Store database

A database containing performance data collected by the Remote Monitor Collector service.

Non-interactive (command)

Command execution method in which operator input required for command execution are provided by values in option specifications or in definition files.

Executing a command non-interactively saves work when configuring an operation monitoring system and can reduce user workload.

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